UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF WASHINGTON

STATE OF WASHINGTON, Plaintiff, vs. SAMUEL W. BODMAN, Secretary of Energy, et al., Defendants.	No. CV-03-5018-AAM **ORDER GRANTING MOTION TO EXPAND PRELIMINARY INJUNCTION *INTER ALIA***

BEFORE THE COURT are plaintiff's Motion To Expand Preliminary Injunction (Ct. Rec. 100) and defendants' Motion To Dissolve Preliminary Injunction (Ct. Rec. 175). These motions were heard with oral argument on April 28, 2005. Joseph E. Shorin, III, Esq., and Andrew A. Fitz, Esq., appeared for the plaintiff. Cynthia Huber, Esq., and Charles R. Shockey, Esq., appeared for the defendants.

I. BACKGROUND

In its original complaint, plaintiff State of Washington (State) sought declaratory and injunctive relief against defendants, alleging the United States Department of Energy (DOE) had decided to ship radioactive and radioactive/hazardous mixed transuranic waste to the Hanford Nuclear Reservation (Hanford) in violation of the National Environmental Policy Act (NEPA) and in violation of Washington's Hazardous Waste Management Act (HWMA). On May 9,

2003, this court entered a preliminary injunction against defendants, enjoining them from making any further shipments of transuranic waste to Hanford pending final resolution of this litigation.

On February 13, 2004, DOE issued its Final Hanford Site Solid (Radioactive and Hazardous) Waste Environmental Impact Statement (HSW EIS). On June 23, 2004, DOE issued two Records of Decisions (RODs) pursuant to the HSW EIS. One of these RODs (the "HSW EIS ROD")[1] announces DOE's decision to send shipments of low-level waste (LLW) and mixed low-level waste (MLLW)[2] to Hanford; identifies treatment, storage, and disposal decisions for that waste; and identifies decisions relating to the storage, processing, and certification of transuranic waste (TRU) for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico. The other ROD ("Transuranics or TRU ROD")[3] is a revision to the September 6, 2002 ROD[4] which led to this court's issuance of the aforementioned preliminary injunction. In this TRU ROD, DOE announces that it intends to compete its remaining shipments of TRU to Hanford from the Battelle West Jefferson Site (Battelle) in Columbus, Ohio if and when the preliminary injunction is lifted.

Following issuance of these RODs, the State of Washington filed an amended complaint on August 19, 2004 which alleges the RODs were not issued in compliance with NEPA. The State seeks to expand the preliminary injunction already in place to prevent DOE from shipping any LLW or MLLW to Hanford pending final resolution of this litigation.

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[1] "Record of Decision for the Solid Waste Program, Hanford Site, Richland, WA: Storage and Treatment of Low-Level Waste and Mixed Low-Level Waste, and Storage, Processing, and Certification of Transuranic Waste for Shipment to the Waste Isolation Pilot Plant." 69 *Fed. Reg*. 39449 (June 30, 2004).

[2] Mixed with hazardous waste and therefore, like transuranic mixed waste (TRUM), subject to RCRA(Resource Conservation Recovery Act)/HWMA regulation.

[3] "Revision to Record of Decision for the Department of Energy's Waste Management Program: Treatment and Storage of Transuranic Waste." 69 *Fed. Reg*. 39446 (June 30, 2004).

[4] 67 *Fed. Reg*. 56990

DOE asserts the RODs are in compliance with NEPA and moreover, with the issuance of the Final HSW EIS, there is no remaining basis for the preliminary injunction enjoining shipments of TRU to Hanford and the injunction should be dissolved.

II. FACTUAL AND PROCEDURAL HISTORY

A. LLW/MLLW

In 1997, DOE issued a "Final Waste Management Programmatic Environmental Impact Statement" ("PEIS" or "WM PEIS") for managing treatment, storage, and disposal of radioactive and hazardous waste. The WM PEIS identified DOE's preferred alternative for disposal of LLW and MLLW as sending the waste to regional disposal sites after it is treated. DOE indicated it would select two to three sites from a list of six which included Hanford, the Idaho National Engineering Laboratory (INEL), the Los Alamos National Laboratory (LANL) in New Mexico, the Nevada Test Site (NTS), the Oak Ridge Reservation (ORR) in Tennessee, and the Savannah River Site (SRS) in South Carolina.

On December 10, 1999, DOE published a notice of preferred alternatives in the Federal Register, identifying Hanford and NTS as DOE's preferred sites for disposal of LLW and MLLW.[5]

In February 2000, DOE issued a ROD confirming its selection of Hanford and NTS as regional sites for disposal of LLW and MLLW.[6] The 2000 ROD stated DOE's decision to regionalize LLW disposal at Hanford and NTS was "based on low impacts to human health, operational flexibility, and relative implementation cost." Specifically as to Hanford, the ROD relied on Hanford's arid climate and "the expansion capability of existing disposal facilities at Hanford." The ROD stated that DOE's decision to regionalize MLLW disposal at Hanford and

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[5] "Identification of Preferred Alternatives for the Department of Energy's Waste Management Program: Low-Level Waste and Mixed Low-Level Waste Disposal Sites," 64 *Fed. Reg*. 69224 and 69241(Dec. 10, 1999).

[6] 65 *Fed. Reg*. 10061 (February 25, 2000).

NTS was also based on the ability to use Hanford's existing facilities:

> The Hanford Site and NTS are the only two DOE sites that have MLLW disposal facilities already constructed. Use of these existing facilities will avoid environmental impacts and costs associated with facility construction.

The HSW EIS evaluated five basic alternatives for disposal of LLW and MLLW at Hanford. The preferred alternative was "Alternative Group D1." This alternative was to dispose of LLW, MLLW and ILAW (immobilized low-activity waste) together in a single new large trench referred to as the Integrated Disposal Facility (IDF). The HSW EIS assumed, for all alternatives, that existing unlined trenches would continue to be used for the disposal of LLW and that existing lined trenches would continue to be used for the disposal of MLLW until IDF becomes operational, anticipated to be in 2007.

The HSW EIS analyzed three different waste volumes for each alternative: 1) a Hanford-Only waste volume consisting of 283,067 cubic meters of waste previously disposed of in the LLBGs (Low Level Burial Grounds). For future estimated waste, this waste volume includes 128,698 cubic meters of LLW, 58,414 cubic meters of MLLW, and 45,748 cubic meters of TRU; 2) a Lower Bound waste volume consisting of the Hanford-Only waste volume plus waste from offsite generators that is already in Hanford waste forecasts. For future estimated waste, both Hanford-generated and offsite, this waste volume includes 149,517 cubic meters of LLW, 58,515 cubic meters of MLLW, and 45,805 cubic meters of TRU, of which 57 cubic meters is offsite TRU; and 3) an Upper Bound waste volume consisting of the Lower Bound waste volume plus additional waste from offsite generators that may be received as a result of PEIS decisions. For future estimated wastes, this waste volume includes 348,362 cubic meters of LLW, 198,852 cubic meters of MLLW, and 47,305 cubic meters of TRU. The Upper Bound waste volume includes 219,664 cubic meters of LLW and 140,438 cubic meters of MLLW from offsite generators. It would also allow DOE to ship up to 1,557 cubic meters of offsite TRU to Hanford for storage and processing pending disposal at WIPP.

The June 23, 2004 HSW EIS ROD limits offsite shipments to Hanford to 62,000 cubic meters of LLW and 20,000 cubic meters of MLLW. DOE also set a lower ceiling of 13,000

cubic meters total (both LLW and MLLW) until the IDF becomes operational around 2007 (of which no more than 5000 cubic meters will be MLLW).

B. TRU

The 1997 PEIS examined where to store and, if necessary, treat TRU prior to its disposal at WIPP. Several alternatives were considered. The "Centralized Alternative" had CH-TRU (contact-handled TRU) from all DOE facilities shipped directly to WIPP for treatment and disposal, and RH-TRU (remote-handled TRU) from all facilities shipped to Hanford and the Oak Ridge Reservation in Tennessee for treatment and interim storage prior to disposal at WIPP. The "Regionalized Alternative" had TRU shipped from sites with small amounts of such waste to designated DOE facilities that had the largest amounts of TRU for treatment and interim storage prior to disposal at WIPP. The "Decentralized Alternative" had DOE facilities keep the TRU they had generated onsite for treatment and interim storage prior to direct shipment to WIPP for disposal. The "Preferred Alternative" was a modified decentralized approach in which TRU would be shipped from five small sites to larger sites (not including Hanford).

In January 1998, DOE issued a ROD on where it would prepare and store its TRU prior to disposal.[7] DOE decided that each of its sites which currently had or would generate TRU would prepare and store its TRU onsite, with the exception that the Sandia National Laboratory in New Mexico would transfer its TRU to the Los Alamos National Laboratory. This decision was based on the PEIS and represented a modification of the "Decentralized Alternative" proposed in the PEIS. The ROD noted, however, that:

> In the future, DOE may decide to ship TRU wastes from sites where it may be impractical to prepare them for disposal to sites where DOE has or will have the necessary capability. The sites that could receive such shipments of TRU waste are the Idaho National Engineering and Environmental Laboratory (INEEL), the Oak Ridge Reservation (ORR), the Savannah River Site (SRS) and the Hanford Site. **However, any future decisions regarding transfers of TRU wastes would be subject to appropriate review under the National Environmental Policy Act (NEPA), and the**

[7] 63 *Fed. Reg.* 3629 (January 23, 1998).

> **agreements DOE has entered into, such as those with States, relating to the treatment and storage of TRU waste. Future NEPA review could include, but would not necessarily be limited to, analysis of the need to supplement existing environmental reviews.** DOE would conduct all such TRU waste shipments between sites in accordance with applicable transportation requirements and would coordinate these shipments with appropriate State, Tribal and local authorities

(Emphasis added).

DOE eventually revised its January 1998 ROD in a decision issued on August 27, 2002 and published in the Federal Register on September 6, 2002. It "now decided to transfer approximately 27 cubic meters of transuranic (TRU) waste from a portion of the Battelle Columbus Laboratory ("BCL"), the Battelle West Jefferson North Site (West Jefferson) in Columbus, Ohio, and approximately 9 cubic meters of TRU waste from the Energy Technology Engineering Center (ETEC) in Canoga Park, California, to the Hanford Site near Richland, Washington, for storage." DOE expected that this waste would ultimately be shipped to WIPP for disposal. DOE concluded additional NEPA review was not required for this revision.

Currently, WIPP is only permitted to handle CH-TRU. It is not yet permitted to handle RH-TRU. On June 28, 2002, DOE submitted a request to the U.S. Environmental Protection Agency (EPA) for an amendment to its certification of WIPP and to New Mexico for an amendment to the Resource Conservation Recovery Act (RCRA) permit for WIPP that would allow disposal of RH-TRU at WIPP. In March 2004, EPA approved DOE's overall implementation plan to characterize defense-related RH-TRU for disposal at WIPP. The approval allows DOE to proceed with developing the site-specific characterization plans for 13 facilities that currently store RH-TRU, including Hanford. It will be at least until 2006 before any RH-TRU can be shipped to WIPP.

The EPA has approved DOE's application for disposal of Toxic Substances Control Act (TSCA) waste. This approval will allow WIPP to accept TRU contaminated with PCBs (polychlorinated biphenyls).

All of the ETEC TRU, and some of the Battelle TRU, has already been shipped to Hanford. According to the State, on or about December 20, 2002, Hanford received four

shipments of TRU, two each from ETEC and Battelle. Furthermore, according to the State, on February 6, 2003, Hanford received two additional shipments from Battelle. By the State's calculation, DOE has completed six shipments containing a total of 40 drums of TRU, of which 13 were CH-TRU and 27 were RH-TRU.

The "Preferred Alternative" under the HSW EIS is that "newly generated mixed TRU waste from onsite and offsite generators would be stored in RCRA-compliant storage facilities such as CWC [Central Waste Complex] and T Plant" and that "[n]ewly generated non-mixed TRU waste from onsite and offsite generators would be stored in several places, such as CWC and T Plant, but remote-handled waste could be stored temporarily in the Low Level Burial Grounds." (HSW EIS, Vol. 1 at p. 3.63). The "Preferred Alternative" is also that "TRU waste would be processed and certified using a combination of the Waste Receiving and Processing Facility [WRAP], a modified T Plant, and mobile processing facilities (APLs)." (*Id*. at p. 3.64).

The June 23, 2004 "Transuranics ROD" authorizes the shipment of the remaining Battelle TRU to Hanford for storage, packaging and certification with ultimate disposal at WIPP, provided this court lifts its preliminary injunction. What remains to be shipped to Hanford are 37 cubic meters of TRU, consisting of 12 cubic meters of CH-TRU and 25 cubic meters of RH-TRU. DOE says it will issue Revised RODs when it intends to ship additional offsite TRU to Hanford.

Relevant to the TRU issue is that on January 24, 2005, this court awarded summary judgment to the plaintiff on its HWMA claim (Ct. Rec. 262), finding the TRUM (transuranic mixed waste) exemption in the WIPP Land Withdrawal Amendment Act of 1996 applies only to WIPP.

III. PRELIMINARY INJUNCTION STANDARD

In order to obtain a preliminary injunction, a moving party must demonstrate either (1) a probability of success on the merits and the possibility of irreparable injury or (2) serious legal questions are raised and the balance of hardships tips sharply in the moving party's favor. *Roe v. Anderson*, 134 F.3d 1400, 1401-02 (9th Cir. 1998). These standards are not inconsistent, but

represent a single continuum of equitable discretion whereby the greater the relative hardship to the moving party, the less probability of success must be shown. *State of Alaska v. Native Village of Venetie*, 856 F.2d 1384, 1389 (9th Cir. 1988).

"Serious questions" are substantial, difficult and doubtful so as to make them a fair ground for litigation. "Serious questions" need not promise a certainty of success, nor even present a probability of success, but must involve a fair chance of success on the merits. *Gilder v. PGA Tour, Inc.*, 936 F.2d 417, 422 (9th Cir. 1991)(citations omitted).

Where the public interest is involved, the court must examine whether the public interest favors the party moving for an injunction. *Sammartano v. First Judicial District Court*, 303 F.3d 959, 965 (9th Cir. 2002). While this inquiry is sometimes subsumed into the balancing of hardships, it is better seen as an element that deserves separate attention in cases where the public interest may be affected. *Id*. at 974. The public interest inquiry primarily addresses impact on non-parties rather than parties. *Id*.

A motion to dissolve a preliminary injunction is "governed by the same considerations that control the validity of the preliminary injunction." *Cascade Local Lodge No. 297 v. International Ass'n of Machinists*, 684 F.2d 609, 610 n.1 (9th Cir. 1982). If the requirements of a preliminary injunction are no longer met, it should be dissolved.

IV. DISCUSSION

NEPA is the "national charter for protecting the environment." 40 C.F.R. §1500.1(a). It requires all federal agencies to prepare an environmental impact statement (EIS) for "major federal actions significantly affecting the quality of the human environment." 42 U.S.C. §4332(C). NEPA is procedural in nature and does not require "that agencies achieve particular substantive environmental results." *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371, 109 S.Ct. 1851 (1989). Instead, it requires agencies to collect, analyze and disseminate information so that "the agency will not act on incomplete information, only to regret its decision after it is too late to correct." Id.

Courts may not "fly-speck" an EIS and must employ a rule of reason. *Swanson v. U.S.*

Forest Service, 87 F.3d 339, 343 (9th Cir. 1996). The court must approve an EIS if it "fostered informed decision-making and public participation." *Nat'l Parks & Conservation Ass'n v. U.S. Dep't of Transp.*, 222 F.3d 677, 680 (9th Cir. 2000). The court's task is to ensure that the agency has taken a "hard look" at probable environmental consequences. *Hells Canyon Alliance v. U.S. Forest Service*, 227 F.3d 1170, 1177 (9th Cir. 2000). The reviewing court is to make a pragmatic judgment without substituting its judgment for that of the agency concerning the wisdom or prudence of a proposed action. *California v. Block*, 610 F.2d 953, 961 (9th Cir. 1982).

Challenges to final agency actions taken pursuant to NEPA are subject to the review provisions of the Administrative Procedure Act (APA). *Southwest Center for Biological Diversity v. Bureau of Reclamation*, 143 F.3d 515, 522 (9th Cir. 1998). 5 U.S.C. §702 provides that "[a] person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof." Pursuant to 5 U.S.C. §706(2)(A), a reviewing court shall "hold unlawful and set aside agency action, findings and conclusions found to be- arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law." For example, an agency's determination of the environmental significance of new information should stand unless it is found to be arbitrary and capricious. *Marsh*, 490 U.S. at 377. Pursuant to 5 U.S.C. §706(2)(D), a reviewing court shall also "hold unlawful and set aside agency action, findings and conclusions found to be- without observance of procedure required by law." Disputes which are primarily legal in nature are reviewed under a "reasonableness" standard. *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 727 (9th Cir. 1995).

A. LLW and MLLW

The State of Washington contends DOE's decision to ship LLW and MLLW to Hanford for disposal violates NEPA for at least three reasons: 1) DOE has failed to properly tier its environmental analyses (the PEIS and the HSW EIS); 2) the HSW EIS's evaluation of environmental impacts and risks related to Hanford groundwater is inadequate; and 3) the HSW EIS contains a declaration that Hanford's groundwater is "irreversibly and irretrievably

committed" that is contrary to law and arbitrary and capricious.

1) Tiering

The State contends DOE failed to properly tier its environmental impact statement analyses because: 1) the PEIS lacks sufficient site-specific detail for selecting Hanford as a regional disposal facility; and 2) DOE's selection of Hanford as a regional disposal facility occurred outside of, and was not informed by, the NEPA process.

a) Site-Specific Detail

According to the State, "[w]hile the WM PEIS may contain sufficient analysis to support broad, programmatic decisions such as whether LLW and MLLW should be disposed using decentralized, regionalized, centralized or 'no action' alternatives, it lacks sufficient detail to support the selection of specific sites" for that purpose. The State contends the WM PEIS offers only a "broad-brush overview" of Hanford which is inadequate to provide a meaningful basis to compare the environmental impacts of siting LLW and MLLW disposal facilities at Hanford to the impacts of siting those facilities at other DOE sites.

The PEIS was intended to help DOE "select a configuration" for, among other things, treatment and disposal of LLW and MLLW. (PEIS at p. 1-3). This decision-making process was to follow a "tiered" approach:

> First, DOE will make broad Departmentwide (sic) decisions, supported by this programmatic NEPA review, about which sites will manage which wastes. DOE will follow these broad decisions with an analysis of narrower proposals for the implementation of programmatic decisions in related NEPA reviews. Although DOE intends to identify a configuration (i.e., select sites for waste management activities as a result of this programmatic EIS), DOE will take a closer look (including site-specific design, location on the site, operating parameters for new facilities, and site-specific impacts) in sitewide or project-level NEPA reviews.

(Id.) (Emphasis in text).

The PEIS elaborated upon this approach as follows:

> DOE intends to select a configuration of DOE sites for waste management activities on the basis of the WM PEIS and other

> factors**. The level of analysis in the WM PEIS is appropriate for making broad programmatic decisions on what DOE sites should be used for waste management. At the programmatic level, however, it is not possible to take into account special requirements for particular waste streams, different technologies that are or may be available to manage particular wastes, or site-specific environmental considerations such as the presence of culturally important resources or endangered species at a specific location on a site. DOE will rely upon other NEPA reviews, primarily ones that evaluate particular locations on sites or projects (sitewide or project-level reviews), for these analyses. Thus, decisions regarding specific locations for waste management facilities at DOE sites or the waste management technologies to be used will be made on the basis of sitewide or project-level NEPA reviews.**

(*Id*.)(Emphasis added).

DOE selected its preferred alternatives based on factors and criteria developed after considering public comments and other available information. These factors and criteria included: 1) consistency; 2) cost; 3) cumulative impacts; 4) DOE Mission; 5) economic dislocation; 6) environmental impact; 7) equity; 8) human health risk; 9) implementation flexibility; 10) mitigation; 11) regulatory compliance; 12) regulatory risk; 13) site mission; and 14) transportation. DOE explained that the preferred alternatives were not decisions, but preliminary preferences subject to further discussion and deliberation. (*Id.* at 1-50 and 1-51). Thus:

> Decisions on waste management sites will be based on the information and analyses in the WM PEIS and other considerations such as regulatory compliance, budget constraints, schedules, compliance with regulatory agreements, including public input on each of the preferred alternatives for each waste type, national priorities and other DOE studies. For example, DOE will continue to work with the DOE Disposal Workgroup and with state representatives in the National Governors Association to evaluate and discuss the issues related to the potential disposal of residuals from treatment of LLMW[8] at sites subject to the FFCAct [Federal Facility Compliance Act]. DOE will work with interested members of the public and the National Governors Association to explore principles that may help DOE in making decisions that reflect public concerns.

(*Id*. at 1-52).

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[8] "LLMW" and "MLLW" refer to the same thing: mixed low-level waste. The court endeavors to use "MLLW" throughout this order.

As noted above, DOE's "preferred alternative" under the PEIS was to dispose of MLLW at two or three sites from the following six: Hanford, INEL, LANL, NTS, ORR and SRS. DOE observed that except for NTS and LANL, it had already established LLW or MLLW disposal operations at these sites. (PEIS, Vol. 1 at p. 3-19). DOE also observed with regard to MLLW that:

> While all six current disposal sites remain candidates for future disposal operations and the potential health and environmental impacts of regionalized disposal are small, further consideration of various factors may affect DOE's site preferences. For example, hydrological characteristics indicate that disposal at sites with high rainfall, such as ORR and SRS, would require mitigation costs that would not be needed at more arid sites. Preliminary cost analyses indicate that regional disposal at ORR, LANL, and INEL may not be as cost effective as disposal at SRS, NTS, and Hanford.
>
> Because of these sometimes contravening factors and the permanence associated with disposal decisions, it is prudent to further evaluate costs and discuss all pertinent aspects of potential configurations with stakeholders before identifying two or three preferred sites for disposal. The Department will notify the public which specific sites it prefers for disposal of LLMW by publishing a notice in the *Federal Register* and by other means. DOE will not issue a Record of Decision selecting any regional disposal sites for LLMW sooner than 30 days after publication of its preferred sites in the *Federal Register*.

(*Id*.). The PEIS stated much the same with regard to LLW. (*Id*. at 3-20).

Chapter 4 of the PEIS pertains to "Affected Environment:"

> In this chapter, **summary** information is presented to characterize the pertinent environmental conditions at the [DOE] sites potentially affected by implementation of the various waste management alternatives . . . . The chapter describes the methodology and assumptions used to define and characterize each important aspect of the affected environment and summarizes the affected environment at the 17 major sites . . . . **Detailed** information on the affected environments at the DOE sites is provided in the Waste Management Programmatic Environmental Impact Statement (WM PEIS) Technical Report on Affected Environment (DOE, 1996).

(*Id*. at 4-1)(Emphasis added). Hanford, INEL, LANL, ORR, SRS, and NTS were among the "major sites." (*Id*. at 4-3).

"DOE evaluated the direct, indirect, and cumulative environmental impacts of the waste management alternatives within defined regions of influence (ROIs) or regions of impact at each of the 17 major sites and along waste transportation routes." (*Id*. at 4-4). "At each of the 17

major sites, a baseline condition for each environmental resource area was determined from existing data and from information provided in previous environmental studies, relevant laws and regulations, and other government reports and databases . . . ." (*Id*.). Environmental factors evaluated included human health as it is related to the level of radionuclide and radiation exposure; air quality; water resources and water quality; geology and soils; ecological resources; socioeconomic conditions; land use; infrastructure; transportation; and cultural resources. (*Id*. at 4-4 and 4-8). For example, with respect to "Water Resources," the PEIS identified the known surface water contaminants, known sediment contaminants, and known groundwater contaminants at Hanford, SRS, NTS, ORR, LANL, and INEL. The known groundwater contaminants at Hanford included cesium, plutonium, strontium, technetium, tritium and solvents. (*Id*. at 4-13).

Vol. 1, Section 4.4 is titled "Affected Environment at the Major Sites:"

> This section contains a summary of the most pertinent facts characterizing the affected environment and defining the ROI for each of the 17 major sites. Each site is first described in terms of its location, mission, and brief history. This is followed by resource area-specific information. **While useful at the programmatic level, this information will be supplemented by detailed analyses in sitewide or project-level NEPA reviews**.

(*Id*. at 4-29)(Emphasis added). The summary regarding Hanford is found at Section 4.4.4, pp. 4-43 through 4-48.

After analyzing the "Impacts of the Management of LLMW," DOE selected six sites as possible regional disposal sites for MLLW which, according to DOE, "already [had] established LLW or LLMW disposal operations and, except for NTS and LANL, each [had] relatively large LLMW volumes for disposal." (*Id*. at 6-111). These six sites had "more than adequate capacity for the amounts of LLMW" of which DOE needed to dispose and "[f]ewer than six sites would provide adequate capacity at a substantially lower cost." (*Id*.).

Again, after analyzing the "Impacts of the Management of LLW," DOE selected six sites as possible regional disposal sites for LLW which "already [had] established LLW disposal operations and, except for NTS, each [had] large waste volumes for disposal." (*Id*. at 7-108). These six sites had "more than adequate capacity for the amounts of LLW" of which DOE

needed to dispose and "[f]ewer than six sites would provide adequate capacity at a substantially lower cost." (*Id*.).

Chapter 11 of the PEIS discussed the combined impacts that could result from locating facilities for management of different waste types at each of the 17 major sites, the cumulative impacts that could result at each of the sites and their surrounding regions, and the cumulative impacts of transporting waste. Chapter 11 also presented the minimum and maximum impacts of the waste management program at each site, as well as the impacts of the "preferred alternatives" at each site. (*Id*. at 11-1). Section 11.6.1 and Table 11.6-1 ("Combined Impacts") and Section 11.6.2 and Table 11.6-2 ("Cumulative Impacts") pertain specifically to Hanford. (*Id*. at 11-30 through 11-36). "Combined Impacts" included: 1) Effects on Offsite Population from Atmospheric Releases; 2) Effects on Offsite Maximum Exposed Individual from Atmospheric Releases; 3) Effects of Transportation on Offsite Maximum Exposed Individual; 4) Noninvolved Worker Health Risks; 5) Air Quality Exceedances; 6) Groundwater Quality Impacts; 7) Resource Requirements; and 8) Socioeconomic Impacts. "Cumulative Impacts" included: 1) Offsite Population; 2) Offsite Maximum Exposed Individual; 3) Worker Population; 4) Transportation Effects on Offsite Maximum Exposed Individual; 5) Resources and Infrastructure; 6) Employment; 7) Air Quality Exceedances; and 8) Groundwater Quality Exceedances. Regarding groundwater specifically, the PEIS had this to say:

> Disposal of LLMW at the Hanford Site under the Decentralized Alternative; Regionalized Alternatives 1, 2, and 4; and the Centralized Alternative could result in exceedances of drinking water standards in groundwater for benzene, carbon tetrachloride, 1,2-dichloroethane, methylene chloride, and U-238. Disposal of LLW at Hanford could result in concentrations of U-238 that exceed drinking water standards under the Decentralized Alternative; Regionalized Alternatives 1 through 6; and Centralized Alternatives 1, 3 and 5. Disposal under the combined preferred alternatives for LLMW and LLW would result in these same groundwater quality exceedances. To meet drinking water standards, performance-based waste acceptance criteria may be needed for onsite disposal of LLMW and LLW.

(*Id*. at 11-35 and 11-36).

With regard to "Combined Waste Management Impacts," the PEIS acknowledged "[t]he most adverse impacts at the Hanford Site and in the Hanford Site region would occur as a result

of some Regionalized and Centralized Alternatives for which treatment and disposal facilities would be constructed for the Hanford Site to manage its own waste and accept offsite LLMW and LLW for treatment and disposal [and] offsite TRUW for treatment . . . ." (*Id*., Section 11.6.1., at 11-30).[9] " The least adverse impacts at Hanford and in the Hanford region generally would result from the No Action, Decentralized, and some Regionalized Alternatives for which the Hanford Site would be primarily responsible for its own waste, would package and ship its waste for offsite treatment and disposal, or would only receive small quantities of waste from other sites for treatment and disposal." DOE concluded that "[f]or most impact categories, the combined impacts of the preferred alternatives at Hanford are expected to be well below the impacts of the maximum combined waste management alternatives at the site." (*Id*.).

In the December 10, 1999 "Identification of Preferred Alternatives for the Department of Energy's Waste Management Program: Low-Level Waste and Mixed Low-Level Waste Disposal Sites," DOE indicated it had chosen Hanford and NTS as the regional disposal sites based on the factors presented in Vol. 1, Section 1.7.3 of the PEIS, as well as subsequent comments from certain stakeholders (i.e., States, Tribal Governments, regulators). 64 *Fed. Reg*. 69241, 69242 (December 10, 1999). In a footnote, DOE acknowledged it had not undertaken any additional NEPA analysis since issuance of the PEIS in 1997, but stated it did not feel such additional analysis was necessary, even though the LLW and MLLW waste volumes had been "updated:"

> The preferred disposal site alternatives were chosen based on factors that would not be affected by these changed volume estimates. Waste volume considerations could have influenced the choice of preferred disposal site alternatives only if the estimated volume of LLW, the estimated volume of MLLW, or the expected nationwide distribution of waste had changed dramatically, none of which occurred. Therefore, DOE has concluded that its decisionmaking process for LLW and MLLW disposal can proceed without preparing a supplemental EIS or a new PEIS.

(*Id*. at 69241).

The December 10, 1999 "Notice" was followed by the February 25, 2000 ROD selecting

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[9] "TRUW" and "TRU" are used interchangeably and refer to "transuranic waste."

Hanford and NTS as the regional disposal sites for LLW and MLLW. The ROD noted that in response to the "Notice," DOE had received eight letters, including one from the Hanford Advisory Board, and one from an individual in Washington State. The Hanford Advisory Board expressed concern about adequate opportunity for public education and involvement, but DOE asserted there had been an adequate opportunity as evidenced by a 150-day public comment period for the WM PEIS during which 1,500 letters/comments had been received, including those from the Hanford Advisory Board. DOE also observed that since publication of the PEIS, it had "continued to share information and discuss the pending decisions in various public forums." The Hanford Advisory Board urged that no offsite wastes be disposed in LLW burial grounds on the Hanford Site until regulators determined whether waste previously disposed there had been adequately characterized as LLW and not MLLW. DOE's response was that "[t]his site-specific implementation issue is beyond the scope of the WM PEIS, [h]owever DOE will consult with regulators to determine an appropriate course of action." 65 *Fed. Reg*. 10061, 10062-63.

In the February 25, 2000 ROD, DOE explained the basis for its decision to dispose of LLW at Hanford and NTS as follows:

> DOE's decision is based on low impacts to human health, operational flexibility, and relative implementation cost. The Hanford Site and NTS provide environmental safety benefits inherent to arid sites, where evaporation rates exceed rainfall by approximately 10 to 1 or more. . . . Both the Hanford Site and NTS LLW disposal facilities have expansion capability and can dispose of a wide range of radionuclides . . . .

(*Id*. at 10064).

DOE explained the basis for its decision to dispose of MLLW at Hanford and NTS as follows:

> DOE's decision to regionalize MLLW disposal at the Hanford Site and NTS is based on low impacts to human health, operational flexibility, and relative implementation cost. The Hanford Site and NTS are the only two DOE sites that have MLLW disposal facilities already constructed. Use of these existing facilities will avoid environmental impacts and costs associated with facility construction.

(*Id*. at 10065).

As is evident from the PEIS and the February 2000 ROD which followed, DOE acknowledged that "site-specific implementation" of its regional disposal plan would require site-specific NEPA review evaluating site-specific impacts. The HSW EIS is that site-specific review. The first question that must be answered, however, is whether the WM PEIS was adequate, by itself, for selecting Hanford as a regional disposal site for LLW and MLLW. Was the selection of Hanford the result of "informed decision-making and [adequate] public participation?" The State asserts that although the PEIS may contain sufficient environmental analysis to support a broad, programmatic decision such as whether LLW and MLLW should be disposed using decentralized, regionalized, centralized, or "no action" alternatives, it simply is not detailed enough to support the selection of specific sites, such as Hanford, as regional disposal sites.

This court's review of the PEIS indicates that all of the 17 major DOE sites received roughly the same level of analysis in the PEIS.[10] No one site received more detailed attention than another site. Furthermore, the analysis of Hanford and the 16 other DOE sites in the PEIS can hardly be labeled cursory. The State asserts "[t]here is nearly no information in the WM PEIS regarding Hanford's existing wastes and contamination, its facilities (including LLW and MLLW disposal facilities), or applicable regulations and cleanup commitments." "Applicable regulations" must be a reference to the State's HWMA regulations, and "cleanup commitments" must be a reference to the Tri-Party HFFACO agreement.[11] It is true the PEIS does not discuss the HWMA and the HFFACO. There is also no discussion about the specific disposal facilities

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[10] Max Power, Nuclear Waste Policy Advisor for the State, claims DOE had available to it site-specific waste management EIS documents for INEL, LANL, NTS, Rocky Flats, and SRS, but no comparable documentation for Hanford. (Power Affidavit, Ct. Rec. 104, at p. 7, Paragraph P). It appears, however, there was "comparable documentation" for Hanford as reflected in the PEIS at pp. 1-55 to 1-74. (Karen Guevara Declaration, Ct. Rec. 158, at Paragraph 5). In her declaration at Paragraph 5, Guevara, who served as Project Manager for the PEIS, notes all the references to Hanford in the PEIS.

[11] Hanford Federal Facility Agreement and Consent Order signed by DOE, EPA and the State.

at Hanford for LLW and MLLW. There is, however, discussion about the volume of wastes at Hanford and the other DOE sites, including LLW and MLLW. (PEIS, Vol. 1, Section 1.6.2 at pp. 1-35 to 1-40). The 17 major sites considered in the PEIS "have the capability for disposal of LLW and MLLW, or have existing or planned major waste management facilities." (*Id*. at Section 1.6.1, p. 1-35). In 1997, when the PEIS was issued, the "existing" disposal facilities for LLW and MLLW at Hanford consisted of the Low Level Burial Grounds (LLBGs) and the Environmental Restoration Disposal Facility (ERDF). (HSW EIS, Section 2.2.3, pp. 2.24 to 2.36).

That the selection of Hanford as a regional disposal site is flawed, says the State, is confirmed by the fact that the site-specific considerations which led DOE to select Hanford are contradicted by the subsequent analysis in the HSW EIS. The State asserts that although the February 2000 ROD specifically relied on the availability of existing LLW and MLLW disposal facilities at Hanford as a basis for selecting Hanford, the preferred alternative in the HSW EIS and its associated June 2004 HSW EIS ROD does not provide for the use of existing facilities. The preferred alternative provides for the construction of a new facility (the "IDF" or "Integrated Disposal Facility") to dispose of LLW and MLLW (including ILAW[12] and Waste Treatment Plant melters from the vitrification process). The new facility is projected to be completed in 2007. Until then, however:

> DOE will continue to dispose of MLLW in lined facilities having leachate collection systems. In addition, effective immediately, DOE will dispose of LLW in the existing lined facilities and will subsequently dispose of LLW in the new lined, combined-use facility when it becomes operational. After the end of disposal operations, the LLBGs and the new lined, combined-use facility will be closed by applying an engineered barrier (cap) to reduce water infiltration and the potential for intrusion.

(HSW EIS ROD at 69 *Fed. Reg*. at 39454).

It is apparent that pursuant to the HSW EIS, DOE still intends to use existing facilities at Hanford for disposal of LLW and MLLW, at least until completion of the IDF. These existing

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[12] "Immobilized low-activity waste" is solidified low-activity waste from the treatment and immobilization of Hanford tank wastes.

facilities are the LLBGs. Therefore, the State is in error when it suggest the HSW EIS rejected use of "existing facilities" for disposal of LLW and MLLW. Moreover, the February 2000 ROD referred to "expansion capability" for LLW disposal at Hanford and the proposed IDF is evidence of such capability. DOE did not say it was selecting Hanford and NTS because it could rely on needing only existing facilities at those sites. Rather, a fair reading is that DOE was saying that one advantage of selecting those sites was the "existing facilities." Using "existing facilities" avoids "environmental impacts and costs associated with facility construction" that would otherwise result if DOE selected a site that lacked such facilities. Furthermore, DOE did not rule out the possibility that new facilities would eventually need to be built.

The State asserts that "inherent in DOE's decision to accept significant quantities of offsite waste at Hanford was a judgment that the existing LLW and MLLW facilities at Hanford would play a significant role in how DOE manages the offsite waste" and "[s]uch a judgment was premature, because DOE did not evaluate the options for and alternatives to managing offsite LLW and MLLW at Hanford until four years after DOE had decided that Hanford would serve as a regional disposal site."[13] According to the State, once DOE did consider its options and alternatives for disposal of LLW and MLLW at Hanford, its analysis was inadequate, presumably referring to what the State says is a defective groundwater analysis in the HSW EIS, and the fact DOE chose to build an entirely new facility (the IDF). The State adds that had DOE not considered the ability to rely on existing Hanford facilities when it made its decision in 2000 to select Hanford as a regional disposal site, it may have chosen another site to serve the regional need. Furthermore, says the State, had DOE properly evaluated site-specific considerations in the WM PEIS, it may have chosen another site.

Obviously, DOE did consider the ability to rely on existing facilities when it made its decision to select Hanford as a regional disposal site and there is nothing arbitrary and capricious about that. With regard to the groundwater analysis in the HSW EIS, its adequacy is discussed

[13] Hanford was selected as regional disposal site in February 2000 and the HSW EIS was issued in January 2004.

infra. If the groundwater analysis in the HSW EIS does not pass muster under NEPA, an injunction will be warranted prohibiting importation of that waste into Hanford pending completion of an analysis that is adequate**,** even if the PEIS was an adequate basis for selecting Hanford as a regional disposal site in the first instance. The fact the 2004 HSW EIS groundwater analysis may be defective in some particular respect does not mean it was arbitrary and capricious in 2000 for DOE to select Hanford as a regional disposal site for LLW and MLLW.

The court concludes the State has failed to establish there are "serious questions" about the adequacy of the PEIS in its selection of Hanford as a regional disposal site for LLW and MLLW.

b) NEPA Process (Public Participation)

According to the State, the May 1997 PEIS failed to identify DOE's preferred disposal sites, as required by NEPA, and when DOE finally identified the preferred sites two and a half years later (in December 1999), it did so without further NEPA analysis and without seeking pubic input on its preference.

40 C.F.R. §1502.14(e) requires than an EIS "identify the agency's preferred alternative or alternatives, **if one or more exists**, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." (Emphasis added). The PEIS did not specifically identify Hanford as a regional disposal site. Instead, it indicated that DOE would select two or three sites from six different sites to serve as regional disposal sites. The PEIS did, however, identify a "preferred alternative" which was that of sending LLW and MLLW to certain regional disposal sites, of which Hanford was a candidate.[14] And it

[14] The "Draft WM PEIS" apparently did not identify any preferred alternatives, (p. 5 of "Introduction" to Summary of Final WM PEIS), and was not required to by regulation. More than 1,200 individuals, states, tribal nations, agencies, and organizations provided DOE with comments on the draft. The court agrees with DOE that if NEPA intended to allow public comment on a "preferred alternative" in an EIS, it would mandate identification of the same in the "draft" instead of the "final" version.

specifically advised that DOE intended to consult further with stakeholders before identifying low-level and mixed waste disposal site preferences ("preferred sites" as opposed to "preferred alternatives") and would publicly announce those preferences at least 30 days prior to making disposal decisions. (Cover Letter to PEIS Summary and Summary at pp. 20, 27-28).

There is no dispute that prior to the December 10, 1999 "Notice" identifying the preferred regional disposal sites (Hanford and NTS), DOE did in fact consult further with "stakeholders."[15]

Considering the PEIS had made it clear how DOE intended to proceed (identifying specific site preferences after consulting with stakeholders) and that DOE did in fact consult with stakeholders in the interim, it is insignificant that the identification of specific site preferences did not occur until two and one half years after issuance of the PEIS. As DOE observes, it could have just gone ahead and identified the "preferred sites" in the Final PEIS, thereby foreclosing any further input from stakeholders. It did not do so. The public was in the loop and knew there was a 1 in 6 chance, if not better, that Hanford would be selected as one of the sites. That the public was in the loop is evidenced by the fact that although the December 10, 1999 "Notice" did not invite public comment, DOE received some comments anyway, including one from the Hanford Advisory Board. Furthermore, the December 10, 1999 "Notice" made it clear DOE had considered the necessity of additional NEPA analysis, but concluded it was not warranted in spite of "updated" waste volumes. The "Notice" indicated DOE would issue a ROD no sooner than thirty days thereafter reflecting its decision on preferred regional disposal sites. The ROD, however, was not issued until 75 days later (February 25, 2000), thereby providing ample time for members of the public to register an objection to the "Notice."

DOE was not obliged to identify in the PEIS the specific sites which it eventually chose for regional disposal of LLW and MLLW. The PEIS identified a "preferred alternative" with an appropriate degree of specificity (regional disposal at two or three of six possible sites),

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[15] See Declaration of Karen Guevara at Paragraph 9. Guevara was the Project Manager for PEIS from May 1997 through December 2000.

expressly advising the public that further comment would be solicited on specific site selection. Such comment was solicited and provided before site selection was made in the February 25, 2000 ROD. There was adequate "public participation." The State does not have a "fair chance" of succeeding on its argument that selection of Hanford as a regional disposal site for LLW and MLLW occurred outside the NEPA process.

2) DOE's "Irreversibly and Irretrievably Committed" Declaration

According to Section 5.15 of the HSW EIS:

> DOE anticipates that current contamination would preclude the beneficial use of groundwater underneath portions of the Hanford Site for the foreseeable future. It is assumed that the tritium and iodine-129 groundwater plumes would exceed the drinking water standards for the next several hundred years.
>
> Within a few hundred years after disposal of wastes evaluated in the HSW EIS, some mobile radionuclides from the wastes would reach the vadose zone surrounding disposal areas and groundwater beneath the Hanford Site. Results of computer simulations . . . predict that levels of these contaminants in groundwater would be below DOE benchmark drinking water standards at 1 kilometer and below the DOE all-pathway limit for the hypothetical onsite resident gardener without a sauna or sweat lodge.
>
> However, due to uncertainties in inventory estimates and mobility parameters, DOE considers groundwater underneath portions of the Hanford Site that is proximate to, or downgradient from, waste sites at Hanford to be irretrievably committed. At a minimum, depending on the location and time of interest, concentrations of radionuclides in groundwater might be such that it would be necessary to place some restrictions on groundwater usage (for example, restrictions on use of groundwater for saunas or sweat lodges late in the 10,000 year period of analysis . . . .)

The State asserts this declaration is made under CERCLA (Comprehensive Environmental Response, Compensation and Liability Act), 42 U.S.C. §9607(f)(1), which provides that the United States is not liable under CERCLA where it demonstrates the damages to natural resources were specifically identified in an environmental impact statement as an irreversible and irretrievable commitment of natural resources. The State contends this is problematic because: 1) it appears an attempt by DOE to unilaterally grant itself a defense to

natural resources liability for its own historic releases contamination, as opposed to commitments of natural resources that will result from proposed actions; 2) it inappropriately assumes that DOE is not required to remedy Hanford groundwater; and 3) the declaration brings into question whether DOE would have selected Hanford as a regional disposal site for LLW and MLLW had the declaration been made at the time of the PEIS.

NEPA mandates an EIS include "any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." 42 U.S.C. §4332(2)(C)(v). The applicable CEQ (Council on Environmental Quality) regulation directs federal agencies to include in an EIS "the environmental impacts of the alternatives, including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, . . . and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented." 40 C.F.R. §1502.16. According to DOE, in the HSW EIS it only did that which it was required to do by NEPA and there is no basis for invalidating the HSW EIS "based on a hypothetical future claim or defense that may or may not be raised under CERCLA for natural resource damages."

The State notes that EPA (which is responsible for CERCLA compliance), in a letter to DOE dated March 16, 2004, expressed concern about the "irretrievable and irreversible commitment of groundwater" declaration in the HSW EIS:

> Such a determination appears to be incorrect with respect to the proposed projects, as those conditions are being addressed consistent with the CERCLA and RCRA cleanup programs. The ability to address existing groundwater conditions with the proposed project is beyond the scope of this EIS. The record(s) of decision for the HSW EIS should clarify that no irreversible and irretrievable commitment of groundwater is being made as a consequence of implementing the preferred alternative and that ongoing cleanup programs will be used to address historic releases with the goal of groundwater restoration.

In the subsequent June 2004 HSW ROD, DOE addressed EPA's concern as follows:

> *Declaration of irretrievable and irreversible commitment of groundwater as a means of abrogating cleanup responsibilities*: As stated in the HSW EIS, DOE believes that already present contamination from past practices precludes the beneficial use of groundwater beneath portions of the Hanford Site for the

> foreseeable future, as a matter of protecting public health. DOE will continue to use ongoing cleanup programs to address contaminants resulting from past practices. DOE intends to meet its responsibilities for cleanup and site remediation and is not changing existing groundwater remediation activities or commitments. Groundwater protection, monitoring and remediation will continue to be performed consistent with the TPA [Tri-Party Agreement], . . . (CERCLA) and . . . (RCRA) past-practice requirements.

69 *Fed.Reg.* 39453-54.

Based on this language in the ROD, the court is not persuaded there are "serious questions" whether DOE is attempting to unilaterally grant itself a defense to natural resources liability for its own historic releases of contamination, or whether it has inappropriately assumed it is not required to remedy Hanford groundwater. The fact this specific language is in a ROD, as opposed to the HSW EIS, does not appear significant or suspicious.[16] DOE has announced in a public document that it "is not changing existing groundwater remediation activities or commitments." It has also announced in this litigation that is not attempting to change anything. This should be sufficient to preclude DOE from attempting to alter its position in the future.

Finally, the court does not believe DOE's declaration raises a "serious question" whether DOE would have selected Hanford as a regional disposal site for LLW and MLLW had the declaration been made at the time of the PEIS. The PEIS readily acknowledged there were known groundwater contaminants at Hanford and that bringing in offsite LLW and MLLW to Hanford might create additional contamination issues.

3) HSW EIS Groundwater Analysis

The State contends this analysis is inadequate in a number of respects and therefore, DOE should be enjoined from shipping offsite LLW and MLLW to Hanford for disposal. According to the State: 1) the HSW EIS's compilation of a "source inventory" and analysis of impacts expected from existing Hanford contamination, specifically hazardous chemical waste,

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[16] It is noted, however, that the HSW EIS specifically acknowledges with regard to its groundwater analysis of hazardous chemical wastes that final closure of the LLBGs will be conducted under RCRA and/or CERCLA guidelines. HSW EIS, Vol. I at p. 5.94.

is uncertain and incomplete in its scope; 2) the EIS's assessment of impacts associated with the disposal of "secondary waste" from the process of turning Hanford's tank waste into glass is directly contradicted by other DOE information; and 3) the EIS fails to adequately show the contribution of individual facilities such as the proposed Integrated Disposal Facility (IDF) to cumulative groundwater impacts.

a) "Source Inventory" re Hazardous Chemical Waste

According to the HSW EIS Summary at p. S.43:

> A screening evaluation of hazardous chemicals potentially disposed of before October 1987 in the Low Level Burial Grounds did not identify any chemicals that would be likely to exceed the 40 CFR 141 maximum contaminant levels over the period of analysis. Wastes containing hazardous chemicals disposed of after 1987 would have been treated according to regulatory requirements [i.e., RCRA and HWMA], and are not expected to present a substantial risk for groundwater contamination.

The HSW EIS indicates that since industries in general did not maintain inventories of hazardous chemicals in waste prior to the implementation of RCRA, there is uncertainty associated with hazardous chemicals in waste disposed in the LLBGs prior to 1988. (HSW EIS, Vol. I at p. 3.57). DOE developed preliminary estimates of hazardous chemicals in the solid wastes that may have been disposed in the LLBGs prior to 1988. This process involved analysis of wastes generated in the late 1980s (1988-89) and extrapolation from hazardous chemicals generated in that time period to the pre-1988 time period. Based on this process, a list of hazardous waste chemicals was identified and these chemicals were subjected to further analysis. (HSW EIS, Vol, II, Appendix G, pp. G.301 to G.306). These chemicals were then screened for relative mobility within a 10,000 year period of analysis, including potential for chemical degradation and volatilization. (HSW EIS, Vol. I at pp. 5.92 to 5.93, Vol. II at p. G.302). This process resulted in a final list of chemicals considered for further analysis which included chromium, fluoride, and nitrate. The HSW EIS utilized a conservative assumption that the entire hazardous waste inventory was distributed within a single burial ground, rather than all the LLBGs used prior to 1988. (Vol. I at p. 5.93; Vol. II, App. G at p. G.303).

The HSW EIS concluded that the "estimated concentration levels at about 100 meters downgradient of the associated low-level waste management area . . . were found to be below MCLs [Maximum Contaminant Levels] for all three chemicals." (Vol. I at p.5.94 and Table 5.17). In other words, the HSW EIS concluded impacts from the estimated chemical inventories in wastes disposed in burial grounds prior to 1988 would not be substantial. The HSW EIS noted, however, that this was a preliminary analysis of wastes disposed before 1988 and that final closure of these areas would be conducted under RCRA and/or CERCLA guidelines that could involve further evaluation of chemical constituents at these sites. *Id*. at p. 5.94.

The State, relying on an affidavit from its expert, Dr. Dibakar Goswami, Senior Hydrogeologist in the Department of Ecology's Nuclear Waste Program, asserts that extrapolation from the late 1980s chemical generation rates "may not accurately account for chemical waste disposal during the height of Hanford's defense-related activity." (First Affidavit of Goswami, Ct. Rec. 107 at pp. 5-6, Paragraph K). The State observes that DOE's "fixed number" inventory estimates for chromium, fluoride and nitrate, do not include any ranges or error margins. (HSW EIS, Vol. II, App. G at p. G.301). It is Dr. Goswami's "opinion" that "it is possible that the fixed-number inventory in the HSW EIS may underestimate the quantities of hazardous waste already disposed at Hanford by "orders of magnitude." (First Affidavit of Goswami at p. 6, Paragraph K). The State asserts that creating and relying upon a fixed-number estimate of chemical source volumes in the face of acknowledged uncertainty related to previous disposal history is "arbitrary and capricious."

Dr. Goswami says that because of its "fixed inventory," DOE proceeded with certainty to screen out all but three chemicals (chromium, fluoride and nitrate) from further consideration in the EIS, based on a preliminary assessment that "without a substantial driving force," only chromium, fluoride and nitrate would reach the unconfined aquifer below Hanford LLBGs within a 10,000 year time frame. According to Dr. Goswami, because of this screening, potential impacts from entire classes of hazardous chemicals, such as the degradation and volatilization processes of hazardous organic compounds, are not evaluated in the EIS. This includes a lack of quantitative analysis of direct risks posed by such substances to human health

and the environment, and a lack of quantitative analysis with regard to indirect impacts, such as whether these chemical constituents may enhance the mobility of constituents, including radionuclides, that otherwise might not migrate to groundwater. (*Id*. at pp. 6-8, Paragraphs M-N).

Finally, the State suggests the inadequacy of the analysis with regard to hazardous chemical inventories is manifested by: 1) the prediction in the 1997 PEIS that proposed waste management activities would result in Hanford's groundwater exceeding drinking water standards for four organic compounds (benzene, carbon tetrachloride, 1,2-dichloroethane, and methylene chloride); and 2) even by analyzing only chromium, fluoride and nitrate, the HSW EIS predicts an impact to groundwater from waste already at Hanford within 140 years or less at the LLBGs.

DOE says it followed a reasonable process in evaluating the potential groundwater quality impacts of hazardous chemicals, that it identified the uncertainties existing with respect to the inventory of said chemicals at Hanford, and that it fully disclosed that information in the HSW EIS. (Affidavit of Marcel Bergeron, Ct. Rec. 165 at pp. 17-26).[17] Says Bergeron: "In light of general lack of record information on hazardous chemicals in these earlier waste disposals in the LLBGs, the indirect extrapolation approach used to estimate inventories disposed in LLBGs prior to 1988 was based on generation rates in a more recent period. This represents a commonly used and reasonable approach for estimating unknown inventories." (*Id*.).[18]

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[17] Bergeron is a Program and Staff Hydrogeologist for Pacific Northwest National Laboratory (PNNL).

[18] The HSW EIS Summary at p. S.53-54 addresses "Areas of Controversy." One of those areas is "Modeling Uncertainties and Evaluation of Long-Term Performance." According to DOE:

> There are differing points of view regarding the ability to predict groundwater impacts and the use of computer models for accurately predicting groundwater and human health impacts far into the future. We estimated long-term impacts using the best available methodologies, and we identified the uncertainties associated with our models.

Bergeron specifically takes Goswami to task for using a tank leak of cesium as an example of organic chemicals enhancing the mobility of immobile constituents in solid waste. Bergeron says it is inappropriate to equate this tank leak, with its unusual hydrologic and geochemical characteristics, with potential constituent migration beneath a burial ground containing solid wastes. (*Id*. at p. 24, Paragraph 87). Douglas Hildebrand[19] takes Goswami to task for noting that "Ecology, EPA, and DOE have addressed volatile organic compounds such as TCE (trichloroethylene) and its degradation product, vinyl chloride, together with their associated biodegradation/natural attenuation processes, in cleaning up sites within Hanford such as the 1100 Area." According to Hildebrand, records show that no significant quantity of TCE or vinyl chloride was disposed in solid waste burial and that the TCE concerns raised by Goswami relate to another area of the Hanford Site, that being the 1100 Area. Hildebrand states "[t]he presence of the TCE in the 1100 Area does not in any manner support an allegation that this material would be present in the 200 Areas LLBGs [which is the area of concern and where the proposed IDF is to be built]." (Hildebrand Affidavit, Ct. Rec. 169 at pp. 7-8, Paragraphs 21-23).

In his Second Affidavit (Ct. Rec. 214), Dr. Goswami does not respond to these specific criticisms. Instead, Goswami reiterates his fundamental concern about the extent of DOE's uncertainty regarding potential groundwater impacts from hazardous chemicals. According to Goswami, "direct experience at Hanford has shown that even when historical data and process information exists to produce a 'good' inventory for a given disposal location, unexpected discoveries occur." (Second Affidavit at p. 4). He then cites two such examples. (*Id*. at pp. 4-5). As far as the prediction of the PEIS regarding Hanford groundwater quality, it was only a "prediction" which did not turn out to be accurate based on the HSW EIS groundwater analysis conducted subsequently. According to DOE's Karen Guevara:

> The PEIS included analysis of potential impacts associated with

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(*Id*. at S.54).

[19] DOE Project Manager.

> Hanford disposal of wastes from across the complex of DOE cleanup sites. In the early-to-mid 1990s, when DOE sites were forecasting their future waste generation rates for input to the PEIS, DOE sites had ceased nuclear weapons production activities, but a decision had not yet been made as to whether that cessation was permanent or temporary. As a result, DOE sites forecasted that over the 20-year period of PEIS analysis, their weapons production activities would require them to dispose of as much as 1,500,000 cubic meters of low-level waste containing uranium, thorium, fission products, induced activity, tritium, alpha-emitting radionuclides, and other isotopes. It was on this basis that the PEIS estimated that disposing all of the 1,500,000 cubic meters of low-level waste at Hanford could mean that DOE would exceed applicable drinking water standards for some constituents.
>
> By the time DOE performed the draft supplement analysis in 1998, however, DOE sites realized that cessation of nuclear weapons production activities was permanent, and they dropped this forecast by two-thirds, estimating in 1998 that only 500,000 cubic meters of low-level waste would need disposal over 20 years. The [HSW EIS] which tiers from the WM PEIS, reflects even more recent estimates from DOE sites of their LLW volumes, as well as more up-to-date assumptions about the waste's radiological constituents. It was on this basis that the [HSW EIS] concluded that no drinking water standards would be in jeopardy.

(Guevara Declaration at Paragraph 16).

As far as the prediction of the HSW EIS that there would be an impact to Hanford groundwater from chromium, fluoride and nitrate within 140 years or less at the LLBGs, the HSW EIS concludes the impact from those "peak concentrations" is not expected to exceed MCLs for any of those substances. (Bergeron Affidavit at Paragraphs 80 and 86, pp. 22-24).[20] Moreover, there is no dispute about DOE's conservative assumption in the HSW EIS that all of

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[20] According to Bergeron:

> With these assumptions about leaching and infiltration rates, peak concentrations at 100 meters from the facility boundary were calculated to occur at about 140 years after assumed start of release. For pre-1970 LLW, the start of release was assumed to begin in 1965. As I described in paragraph 80, the analysis found that peak calculated concentrations were much below maximum [contaminant] levels (MCLs).

(Bergeron Affidavit at Paragraph 86).

the hazardous waste was disposed of in a single burial ground when, in fact, it was disposed of in multiple burial grounds. (See Bergeron Affidavit at Paragraphs 82 and 83).

Finally, specifically at issue now is offsite MLLW which DOE intends to ship to Hanford for disposal. As Bergeron notes, this MLLW (and all MLLW disposed after 1988) needs to meet applicable hazardous waste disposal requirements, Land Disposal Restrictions (LDR) of the Resource Conservation and Recovery Act (RCRA) and State of Washington dangerous waste regulations (HWMA) before being disposed. MLLW received from offsite facilities will have been treated as necessary prior to disposal; will meet the applicable LDRs of hazardous waste laws; and will be disposed in RCRA compliant disposal facilities with double liners and leachate collection systems meeting hazardous waste regulations designed to protect human health and the environment from chemical hazards. (*Id*. at Paragraphs 58-59, pp. 17-18). The primary concern is the MLLW that was disposed at Hanford prior to 1988, for which the records are not good and which was not subject to RCRA/HWMA regulation. There will be less uncertainty about what is contained in the offsite MLLW which will be sent to Hanford and moreover, this MLLW will need to meet all of the RCRA/HWMA requirements before it is disposed at Hanford.

b) "Source Inventory" re Radionuclides

"Secondary waste" is a waste stream that will be produced once Hanford's Waste Treatment Plant (WTP) becomes operational. WTP will process Hanford's high-level radioactive tank waste. After being separated into "high activity" and "low activity" waste streams at a pretreatment plant, tank waste will be vitrified for disposal. The "high activity" fraction will be vitrified as "Immobilized High Level Waste" for intended disposal at a deep geologic repository (Yucca Mountain, Nevada). The "low activity" fraction will be vitrified as "Immobilized Low Activity Waste" (ILAW) for disposal onsite at the IDF (Integrated Disposal Facility), the same facility which DOE intends to have accept offsite LLW and MLLW for disposal.

"Secondary waste," the by-product of the aforementioned process at WTP, will contain

Iodine-129 and Technetium-99. One secondary waste stream ("liquid secondary waste") will be created from the WTP's off-gas system, which will route material volatized during the melting process to "scrubbers" designed to capture pollutants. Wastewater from these scrubbers (the "liquid secondary waste") will then be routed to a separate treatment plant (the Effluent Treatment Facility or ETF) where contamination will be separated from the wastewater and converted to a solid form. This secondary waste (now in solid form), will be encapsulated in grout (concrete or cement) and disposed to the proposed IDF.

The HSW EIS, Vol. II, Appendix L, at pp. L.13-14 states:

> A major difference in inventories in the 200 East and 200 West Area solid waste disposal facility "as cement" deposits and in ILAW deposits lies in the use of different resources to estimate future disposals and secondary wastes from the processing and solidification of tank wastes at Hanford. The initial assessment [Initial Assessment Inventory] relied on the Hanford Tank Waste Operation System (HTWOS) model that relied on a suite of potentially out-of-date factors to estimate secondary waste stream composition. This resulted in nearly 1300 Ci [curies] of technetium-99 and 65 Ci of iodine-129 being disposed of in the 200 West Area as solid waste in cement. The initial assessment inventory also relied on an earlier estimate of ILAW inventory that assumed no iodine-129 would be retained in the glass waste form. The HSW EIS relies on more current ILAW and secondary waste inventory estimates. Accordingly, the HSW EIS shows 3700 Ci of technetium-99 and 5 Ci of iodine-129 being disposed of in the 200 East Area as solid waste in cement, and 22 Ci of iodine-129 being disposed of in the ILAW glass. Inventories with the greatest differences either are simulated as cement waste forms that release relatively slowly (for example, the 200 East and West Areas solid waste cement) or are not simulated by the initial assessment (for example, ILAW and melter waste). A difference of approximately 2000 Ci in technetium-99 exists between the two estimates of secondary technetium-99 wastes. Similarly, a difference of approximately 60 Ci in iodine-129 exists. **These differences will be reconciled as projections are updated; however, all of this waste would be disposed of in cement to minimize the hazard**.

(Emphasis added).

Suzanne L. Dahl-Crumpler is the Tank Waste Disposal Project Manager for the Nuclear Waste Program of the State's Department of Ecology. She says Ecology is aware that the assumptions used in the HSW EIS with regard to the total inventory of iodine-129 and technetium-99 in the WTP process, and the curies of these constituents assumed to end up in

ILAW glass and secondary waste (grouted waste form) derived from the ETF, are contradicted by other contemporaneous information provided by DOE to Ecology.[21]

(I) Iodine-129

Dahl-Crumpler notes that on March 29, 2004, DOE's Office of River Protection (ORP) presented Ecology with a PowerPoint presentation titled "Technical Issues Ecology Briefing, March 29, 2004 by USDOE." This presentation assumed that of a total inventory of 48.2 curies of iodine-129 in Hanford's tank waste, 7.7 curies would end up in the ILAW glass and 40.5 curies would end up in secondary waste from ETF. The significant difference, says Dahl-Crumpler, is that whereas the HSW EIS assumes only 5 curies will be in grouted secondary waste from ETF, the March 29, 2004 presentation assumes a number eight times greater, 40.5 curies.

Dahl-Crumpler also points out another DOE document titled "Risk Assessment Supporting the Decision on Initial Selection of Supplemental ILAW Technologies, September 29, 2003, RPP-17675 Rev 0" (aka "Supplemental ILAW Risk Assessment"). According to this

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[21]According to Dahl-Crumpler, "it is unclear how the HSW EIS accounts for the extra 38 curies of iodine-129 identified in the initial assessment (65 Ci of iodine-129 identified in initial assessment versus a total of 27 Ci identified in the HSW EIS inventory- 5 Ci being disposed of in the 200 East IDF Area as solid waste in cement plus 22 Ci being disposed of in the ILAW glass). Michael Collins, HSW EIS Document Manager, notes that the HSW EIS, Volume II, at p. L.15 states:

> The remaining inventory of iodine-129 is not shown in the HSW EIS inventory used in the alternative analyses because it is not assumed to be part of solid wastes evaluated in the alternative groups. However, for the cumulative impact analysis an additional inventory of approximately 60 Ci of iodine-129 [the 64.2 curies in table L.1] are accounted for as solid waste in cement.

(Collins Declaration, Ct. Rec. 160 at pp. 19-20).

document: (1) the "low estimate" of how much iodine-129 ends up in ETF secondary waste is 78 percent, with 22 percent ending up in glass; (2) the "best estimate" shows that 0 percent ends up in glass, 1 percent goes to off gas, and 99 percent ends up in ETF secondary waste form; and (3) the "high estimate" is that 100 percent of the iodine ends up in the ETF secondary waste form.

The Supplemental ILAW Risk Assessment chose to use the "best estimate" number in its calculations. Even with that "best estimate," the Supplemental ILAW Risk Assessment concluded the groundwater impacts associated with iodine-129 are "quite high" and greater than the impacts associated with the actual glass products. Based on projected releases from the secondary waste associated with the completion of 25 percent of the ILAW production, the groundwater concentration was modeled to be 4.21 pCi/L (picocuries per liter). (Supplemental ILAW Risk Assessment at p. 5-3). According to Dahl-Crumpler, "[i]f these results are multiplied by four to reflect projections based upon 100 percent completion of the waste production, the resultant groundwater concentration of iodine-129 from secondary waste releases is 16 pCi/L." (First Dahl-Crumpler Affidavit, Ct. Rec. 110 at pp. 14-15, Paragraph CC).[22] The HSW EIS does not reflect these expected impacts to groundwater because it does not assume as much iodine-129 in the ETF secondary waste disposed to IDF. Says Dahl-Crumpler, "[b]ecause of this, the EIS fails to consider any mitigation measures to be taken for this grouted waste form. The HSW EIS makes no mention of mitigation measures for secondary waste associated with ETF." (*Id*. at p. 15, Paragraph DD).

DOE acknowledges the March 2004 presentation represents a discrepancy, but explains that it seeks "to improve its understanding of waste inventories since the time it prepared and issued the HSW EIS, and its scientific information and understanding are likely to evolve over time, as DOE moves forward with treatment and cleanup activities." (DOE Response Memorandum, Ct. Rec. 155 at p. 47). According to DOE:

> The grouted waste from treatment of WTP secondary tank waste is

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[22] Based on an iodine-129 inventory of 5.1 curies as secondary tank waste in a grouted waste form at the IDF, the HSW EIS projects a calculated peak groundwater concentration of 0.09 pCi/L at the facility boundary line.

> a byproduct of vitrification of tank wastes. The amount of iodine-129 that ultimately would be found in secondary tank waste is a function of at least three factors: the total inventory of iodine in the tanks; the extent to which the iodine-129 will be captured in glass in the course of vitrification; and continued work on vitrification and grouting technologies. DOE continues to gain information as to all of these factors.

(*Id*. at pp. 47-48).

Stephen A. Wiegman, Senior Technical Advisor for DOE ORP (Office of River Protection), reiterates that there is "significant uncertainty" with regard to the amount of iodine-129 stored in the tanks. He says that "[f]or purposes of conservatism, the current Best Basis Inventory estimate for the amount of iodine-129 assumed to be in the waste tanks is 43.9 curies." (Wiegman Declaration, Ct. Rec. 159 at p. 5). Wiegman adds that "[w]hile the amount of iodine-129 that may be disposed in the IDF from tank waste processing, and the waste form it will be in (glass or grout) is uncertain, the total inventory is expected to be less than the 43.9 curies conservatively estimated to be in the tank waste inventory." (*Id*. at p. 6). Wiegman, however, does not say exactly how much less it might be. Instead, he says DOE will continue to follow the technology development activities relating to the capture rates of iodine-129 in the glass waste forms produced by tank waste vitrification, and will evaluate the quantity of iodine-129 that may exist in the tank waste itself so as to further understand the conservatism in its current estimate of iodine-129 in the tanks. Wiegman says "[t]hese actions are expected to result in the determination that the amount of iodine-129 that will be in the secondary waste from the WTP is less than the current conservative estimate." (*Id*.).[23]

Frederick M. Mann is the author of the September 2003 Supplemental ILAW Risk

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[23] Bergeron states he is aware that a different current I-129 inventory estimate for secondary grouted waste from the ETF processing of WTP secondary liquidated waste is discussed in Wiegman's declaration (43.9 ci total inventory in tank waste). It is different from the estimate in the HSW EIS: 22 ci in the ILAW glass and 5 ci in secondary grouted waste. Bergeron notes, however, that Wiegman discusses the conservatism and uncertainty associated with the 43.9 ci estimate and that ORP will be gathering additional information "that is expected to reduce the estimate before WTP begins full operation, projected to take place in 2011." (Bergeron Affidavit at p. 9).

Assessment. He claims it is inappropriate for Dahl-Crumpler to rely on that study because it used 1999 data regarding the inventory of technetium-99 and iodine-129 going to the WTP to enable proper comparisons to be made. Mann says the 2003 study "used certain data in its analysis that was not based on the most recent knowledge or estimates, but rather that would allow the results of the analysis to be more directly compared to published information based on older data generated some years earlier" and "[i]t was not the intent of this document to perform an environmental analysis that would utilize the most current expectations regarding projected waste inventory or other factors related to long-term performance of the waste, especially grouted waste." (Mann Affidavit, Ct. Rec. 166 at p. 3).

Mann acknowledges the current "BBI" (Best Basis Inventory) of iodine-129 in tank waste is 43.9 curies. He says that using this estimate, and current estimates for partitioning among various waste streams, "about 40 curies of iodine-129 would end up in secondary waste grout and about 4 curies of iodine-129 would end up in ILAW glass or other alternative supplemental waste forms." (*Id*. at pp. 6-7). Mann indicates that on April 20, 2004, he made a presentation titled "Risk Assessment Information For IDF Permitting" to an audience which included Dahl-Crumpler. In that presentation, he explained that the HSW EIS indicated 5 curies of iodine-129 disposed in grout in the IDF would result in a calculated peak groundwater impact of 0.09 picocuries per liter. According to Mann, if the amount of iodine-129 in the grout was increased from 5 curies to 40 curies, one could multiply the estimated 0.09 picocuries per liter concentration by 8, and come up with a result of 0.72 picocuries per liter which is smaller than the MCL level in drinking water (1 picocurie per liter). (*Id*. at pp. 8-9, Paragraphs 19-20).

In response, Dahl-Crumpler asserts that Mann does not identify any significant differences in important assumptions between his ILAW Performance Assessment and the HSW EIS, therefore suggesting it is appropriate for her to cite the ILAW Performance Assessment as

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contradicting the HSW EIS regarding iodine-129 inventory estimates. (Second Dahl-Crumpler Affidavit at p. 10, Paragraph T).[24] Dahl-Crumpler agrees that if a secondary waste inventory of 40.5 curies of iodine-129 (the figure from DOE's March 29, 2004 presentation) is substituted for the HSW EIS inventory of 5.1 curies based on an assumed 100 percent completion of tank waste processing, the resulting projection is a groundwater concentration of 0.72 pCi/L, as compared to the 16 pCi/L concentration projected by the analysis in DOE's 2003 Supplemental ILAW Risk Assessment. (*Id*. at p. 11, Paragraph V).[25] According to Dahl-Crumpler:

> What is significant is that two contemporaneous documents developed by the same federal agency arrive at such radically different results. The technical answer as to why lies in the raw data of the assumptions used in the respective analyses regarding waste form performance (i.e., how well grout will immobilize iodine-129 over time)[26], surface water recharge, waste transport through the vadose zone to groundwater, and possibly others. The layperson's answer is that DOE uses different assumption sets in the different documents. When the answers are this different, however, it is a cause for great concern and it leads the State to be distrustful of both documents.

(*Id.* at p. 11-12, Paragraph V).

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[24] The "ILAW Performance Assessment," otherwise known as the *Hanford Immobilized Low-Activity Waste Performance Assessment: 2001 Version* (DOE/ORP-2000-24, 2001 PA) was Mann's original work in 2001. It was supplemented in 2003 by the Supplemental ILAW Risk Assessment.

[25]DOE contends that Dahl-Crumpler's calculated impact of 16 pCi/L corresponds to an iodine-129 inventory of 88.8 curies which "is more than twice the current estimated iodine-129 inventory cited in her affidavit [40.5 curies]." Actually, though, Dahl-Crumpler never says anything about 88.8 curies. As noted above, she gets to 16 pCi/L by multiplying 4.21 pCi/L by four. Based on projected releases from the secondary waste associated with the completion of 25 percent of the ILAW production, the groundwater concentration is modeled to be 4.21 pCi/L in the 2003 Supplemental ILAW Risk Assessment. Multiplication of that figure by four is necessary to reflect 100 percent completion of the waste production. No one from DOE disputes that this is simply a matter of extending, through basic arithmetic, the conclusion in the Supplemental ILAW Risk Assessment.

[26]In her second "reply" affidavit, Dahl-Crumpler discusses in some detail issues surrounding grout performance, but because the discussion is in her "reply"affidavit, DOE did not have an opportunity to respond to those issues.

Dahl-Crumpler asserts that an iodine-129 concentration of 0.72 pCi/L is "very close" to the drinking water standard of 1 pCi/L and therefore, even if the sixteen-fold exceedance of the drinking water standard in the 2003 Supplemental ILAW Risk Assessment is ignored, "there are enough questions regarding the assumptions used in the HSW EIS's own modeling and their associated uncertainties, that one should assume an uncertainty range . . . that exceeds the drinking water standard. (*Id*. at pp. 14-15, Paragraph Z).

DOE contends that the LLW and MLLW which will be shipped to Hanford is but a fraction of the LLW and MLLW already at Hanford which will require processing and this should be kept in mind in determining whether shipments of LLW and MLLW to Hanford should be enjoined. While this has some immediate appeal, the court is not persuaded the two can be viewed wholly separately in determining groundwater impacts at the proposed IDF. Dahl-Crumpler puts it this way:

> Based on the analysis in the HSW EIS, DOE has already issued a Record of Decision (ROD) committing disposal capacity at Hanford to offsite waste before the impacts from disposal of Hanford's *own* waste are clearly understood. Under DOE's decision, offsite waste will be disposed to IDF before the bulk of Hanford's own waste. It will thus assume a part of the total available "risk budget" for IDF before we are assured that space within that budget is available. Furthermore, because the HSW EIS does not identify a significant impact associated with ETF secondary waste disposal [only 5 Ci of iodine], no mitigation measures related to disposal of the waste . . . are identified or considered.

(*Id*. at p. 16)(Emphasis in text).

DOE disputes that mitigation measures are not identified in the HSW EIS. According to DOE's Michael Collins, the HSW EIS and the HSW EIS ROD describe several measures, in addition to use of the grouted waste form, which can be taken to mitigate the potential impacts of the secondary waste coming from the ETF. These measures include caps to minimize infiltration of waste and contaminant transport; liners and leachate collections systems to gather water entering disposal facilities; performance assessments and facility-specific waste acceptance criteria to limit the types and amounts of contaminant that can go into disposal facilities and still meet performance objectives; groundwater monitoring wells and other monitoring systems to detect releases to the environment. (Collins Declaration at pp. 23-24, Paragraph 45). Bergeron

notes that the benefit of barriers (closure caps) and liners on the release of source constituents from grouted wastes were not considered in the HSW EIS Alternative Group D1 (combined-use facility) analysis. Bergeron says this is a conservative approach, because had the "combined effect of a robust liner and engineered cover system and some adsorption" been considered in the leaching of grouted wastes and the overall transport in the vadose zone, "the already low impacts in the groundwater from technetium-99 and iodine-129 inventories contained in the secondary grouted wastes at the IDF would be lower than those summarized in the current HSW EIS alternative analysis." (Bergeron Affidavit at p. 13, Paragraphs 40-41).

Dahl-Crumpler acknowledges that landfill caps, liners, and leachate collection systems are important features in mitigation, but asserts iodine-129 will outlast the design life of these features. According to her, the mitigation measures that will protect groundwater include: 1) disposal of waste forms that will not substantially leach or diffuse their waste constituents; 2) limitation of waste inventories to the amount that can be handled by the landfill system and soils so as not to impact groundwater; and 3) the implementation of a risk ledger analysis that pre-plans and limits excess inventories or waste forms from disposals that are not protective of groundwater. (Second Dahl-Crumpler Affidavit at p. 8, Paragraph P).

(ii) Technetium-99

It is true, as DOE asserts, that Dahl-Crumpler erroneously states the HSW EIS assumes no technetium-99 ends up in grouted secondary waste associated with ETF. The HSW EIS shows 3700 Ci of technetium-99 being disposed of in the 200 East Area as "solid waste in cement." According to DOE's expert, Frederick M. Mann, the 3,700 curies includes about 3,230 curies of technetium-99 assumed to be in grouted secondary waste from tank waste processing (Mann Affidavit at p. 10, Paragraph 24).[27]

Dahl-Crumpler notes that the 2003 Supplemental ILAW Risk Assessment indicates the

[27] In their respective affidavits, Wiegman and Bergeron indicate that recent data show the amount of technetium in grouted secondary waste may be considerably less (260 curies). (Wiegman Affidavit at p. 6, Paragraph 13; Bergeron Affidavit at pp. 12-13, Paragraph 38).

"best" estimate is 0.1 percent of technetium-99 goes to ETF secondary waste form and 99.9 percent ends up in glass (ILAW), and the "high" estimate is 10 percent ends up in ETF secondary waste form and 90 percent ends up in glass. Projected impacts to groundwater are based on the disposal of the volume of secondary waste produced upon 25 percent of the WTP tank waste processing. Therefore, according to Dahl-Crumpler, to see the concentrations projected upon the final volume of secondary waste disposed (the amount generated upon 100 percent completion of processing of all Hanford's tank waste), the numbers in the Supplemental ILAW Risk Assessment must be multiplied by four. If 0.1 percent of technetium-99 ends up in the secondary waste, it is equal to 25.5 curies being disposed to IDF in secondary waste, resulting in a groundwater concentration of 5.48 pCi/L. If 10 percent ends up in the secondary waste, it is equal to 2550 curies being disposed, resulting in a groundwater concentration of 548 pCi/L. (First Affidavit of Dahl-Crumpler at pp. 16-17, Paragraph GG). Although Dahl-Crumpler acknowledges the drinking water standard for technetium-99 is 900 pCi/L, she contends that "[a]dding this concentration [548 pCi/L] to Hanford's existing contamination will exacerbate the existing contamination (which already includes technetium-99 contamination) . . . [and] [t]herefore, even though the individual contribution of technetium-99 from secondary waste disposal at IDF may not be projected to exceed drinking water standards, it will add to the existing cumulative impact at the Site." (*Id*. at 17, Paragraph GG).

As noted above, Mann says that of the 3700 curies of technetium-99 being disposed of in the 200 East Area, per the HSW EIS, 3,230 curies are to be disposed to IDF in grouted secondary waste form. This is almost 700 curies more than the 2,550 curies used by Dahl-Crumpler to arrive at a groundwater concentration of 548 pCi/L. It does not appear the extra 700 curies would result in an exceedance of the drinking water standard (900 pCi/L) and Dahl-Crumpler asserts nothing of the sort in her second affidavit.

Mann contends the State erroneously assumes that disposal of grouted secondary waste containing technetium-99 will add to the existing contamination "**that is present in groundwater**." (Emphasis added). According to Mann:

> Because technetium-99 essentially moves with groundwater,

> the current technetium-99 in the groundwater will not be present at the time, long in the future, when the technetium-99 from the grouted waste in the IDF is assumed to have a potential impact on groundwater. Even with the conservative assumption I used in the [Supplemental ILAW Risk Assessment], the estimates of the travel time for technetium-99 from the disposal location to the aquifer is 1,800 years. In 1,800 years, the existing contamination will have moved with the groundwater flow. Thus, the technetium-99 from IDF will **not** have an effect on existing technetium-99 contamination in groundwater.

(*Id*. at p. 11)(Emphasis added).

In her second affidavit, Dahl-Crumpler says that DOE and Mann errantly assume she was referring to exacerbating existing contamination in groundwater. (Second Affidavit of Dahl-Crumpler at p. 16, Paragraph DD). According to Dahl-Crumpler:

> In actuality, I was speaking of iodine-129 and technetium-99 contamination existing in soils, closed tank residuals, and other sources. Even if Hanford's existing technetium-99 and iodine-129 groundwater plumes have already migrated into the Columbia River by the time releases from IDF are expected, IDF may cumulatively impact releases from these other existing Hanford sources.

(*Id*. at pp. 16-17, Paragraph DD).

c) Cumulative Groundwater Impacts Analysis

The State contends the HSW EIS fails to provide a basis to judge the contribution of a facility such as IDF to cumulative site impacts.

The System Assessment Capability (SAC) is the computational tool used to assess cumulative impacts for all past, present, and future disposals and remedial actions at Hanford. Appendix L of the HSW EIS contains the cumulative analysis of groundwater impacts at Hanford. It is "a quantitative evaluation containing detailed information of the potential long-term impacts to groundwater from past, present, and reasonably foreseeable future disposals and remedial actions at the Hanford Site." (Kincaid Affidavit, Ct. Rec. 162 at p. 3, Paragraph 6).[28] According to Kincaid:

[28] Charles T. Kincaid, an engineer with Pacific Northwest National Laboratory, led the work on cumulative groundwater impacts and drafted Appendix L.

> The computational tool that enables the cumulative analysis to be performed is designed to address the uncertainty of contaminant inventory, contaminant release, contaminant migration, and risk and impact to ecology and man. It utilizes a "Monte Carlo" method to perform calculations. The Monte Carlo method uses values of uncertain parameters that are selected at random from reasonable ranges established for each parameter. In such an analysis, referred to as a "stochastic analysis," multiple computer model runs or "realizations" are created, each representing a combination of uncertain parameter values. The cumulative analysis has hundreds of uncertain parameters. **Because the cumulative analysis problem being analyzed is large and complex, fewer realizations were completed with the available computing resource, and the results were limited to a discussion of the median or mean response and the range of simulated response**.
>
> The computational tool can also be set up to perform a single calculation using only a single value for each model parameter. This calculation is described as a "deterministic" simulation; it does not account for uncertainty in the physical, chemical, and biological relationships or the parameter values. The set of model parameters defined by the median value of each individual parameter was simulated and presented in the HSW EIS.

(*Id*. at p. 5-6, Paragraph 12)(Emphasis added).

Kincaid describes Appendix L as follows:

> Appendix L provides supporting information on each module of the cumulative analysis computational tool, and presents results of the 25-realization stochastic simulation as well as the median-value deterministic simulation of contaminant migration and impacts. These results include analysis of the release to groundwater of each contaminant (i.e., technetium-99, iodine-129 and uranium) in several disposal types (e.g., solid waste, liquid discharges, single- and double-shell tanks) to groundwater beneath the two major operational areas of the Central Plateau (i.e., 200 East and 200 West). Concentrations and drinking water dose from the consumption of groundwater are presented for three LOAs [Lines of Analysis]; northeast of the 200 West Area, northwest of 200 East Area, and south-east of the 200 East Area. Concentrations and drinking water dose are also presented for Columbia River water at the City of Richland. Finally, ILAW glass impacts are shown superimposed on the impacts of all other releases for the IDF location. In order to include a quantitative analysis of cumulative impacts, model results and impacts were reported at the water table interface between the vadose zone and groundwater, at various LOAs in the unconfined aquifer, and at the uptake point for the first city downstream of Hanford.

(*Id*. at p. 8, Paragraph 17).

Kincaid addresses the additional inventories of technetium-99 and iodine-129 postulated by Dahl-Crumpler. (Kincaid Affidavit at pp. 15-16). His conclusion is that:

> Grouted secondary waste, even if it assumed to include 2,550 curies of technetium-99 and 40.5 curies of iodine-129 in grouted secondary waste from the processing of tanks waste, disposed at the IDF site near PUREX along with other onsite and offsite LLW and MLLW, will not influence peak water quality and human health predictions since the peak impacts occur immediately after site closure and releases from grouted waste occur later [1,360 years later to be more precise].

(*Id*. at p. 20, Paragraph 41).[29]

The State contends that because of the "tremendous uncertainties" regarding "any assessment of cumulative impacts at Hanford," the manner in which the SAC was utilized for the HSW EIS, "in particular, with respect to the limited number of 'realizations' [25] run in the interest of saving time, money and staff effort- means that while the tool itself may be good, the results as reported in the HSW EIS should not be relied upon for decision-making." The State notes that the utility of the SAC depends on how effectively it produces results close to field

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[29] Bergeron agrees:

> In my professional opinion, consideration of these potential revisions to iodine-129 and technetium-99 inventories, while relevant to consider in future detailed facility-specific risk and performance assessment analyses, would not substantially change the overall results and key conclusions of the HSW EIS alternative analysis.
>
> Incremental impacts resulting from potential increases in the HSW EIS iodine-129 inventories and decreases in the HSW EIS alternative analysis to reflect these estimates for secondary grouted wastes from the WTP would not lead to substantial changes in groundwater quality and human health impacts from the IDF postulated in HSW EIS Alternative Group D1. Impacts from solid waste disposal are not expected to result in substantial health risks to potential future users of groundwater underlying the Hanford Site.

(Bergeron Affidavit at pp. 14-15, Paragraphs 45-46).

observation. The State contends the SAC is still early in its development and that a number of issues need to be addressed.

In his second affidavit, Dr. Goswami cites examples of how the SAC simulations are not consistent when compared to known Hanford values. According to Goswami, SAC simulations have yet to fully match the extent of the current known tritium plume at Hanford "for which good historical field data are available and chemical and transport behavior is simple and well understood." SAC modeling to represent the reach of Hanford's tritium plume in 1985 and 1995 does not show the plume reaching the Columbia River in the eastern portion of the Site, although field data confirmed the plume had already reached the river in this area by 1985, a condition that was also present in 1995. (Second Goswami Affidavit, Ct. Rec. 214 at p. 7, Paragraph O). Goswami also says the SAC has shown that the highest predicted ecological hazard quotients for chromium in an indicator species of Mayfly are in Hanford's 100 N Area, while field observation shows the highest levels of contamination are actually in the 100 D Area. (*Id*. at p. 8-9, Paragraph P).

Goswami notes that for each of the "selected contaminants," SAC ran 25 stochastic realizations (randomly selecting values from within ranges established for each parameter) and then utilized a single value for each parameter based on the median values from the realizations, running a deterministic simulation to provide a final output. (*Id*. at pp. 9-10, Paragraph R). According to Goswami:

> While this may [be] an appropriate *approach* for accounting for uncertainty, in my opinion the *number* of realizations used to calculate the median value utilized for analysis in the HSW EIS . . . was too limited. In addition, no comparative studies to validate the median values input to the deterministic simulation against known values at Hanford were carried out, which is necessary to a credible assessment. When uncertainty propagates (increases) over a given time span modeled (as is the case here), it is scientific to have more realizations to better handle uncertainties. For the HSW EIS, the SAC used 25 realizations for 1000 years of simulation. According to DOE itself, however, *100 realizations* or more are needed to account for uncertainty increases over the time span modeled . . . . Given the presence of the hundreds of uncertain parameters involved in the SAC studies, DOE should have undertaken more realizations to handle uncertainties. This will provide better median values to carry forward into deterministic simulations.

(*Id*. at p. 10, Paragraph R)(Emphasis in original).

In support of his statement that DOE acknowledges at least 100 realizations are necessary, Goswami cites to a "Final Meeting Summary" of the Hanford Advisory Board. The meeting took place in April 2003. The summary reflects that Bob Bryce of PNNL (Pacific Northwest National Laboratory), manager for the development of SAC, was asked about the uncertainty boundaries "for projecting **beyond** 1,000 years." (Ex. 8 to Goswami Affidavit at p. 6)(Emphasis added). In response, Bryce indicated 25 realizations had been done and to quantify uncertainty, 100 realizations or more would be needed since uncertainty increases over time. 25 realizations were done for a span of 1,000 years and it appears Bryce was saying that 100 or more realizations are necessary if one goes beyond a 1,000 years. Consequently, the court is not persuaded this is the damaging admission Goswami apparently makes it out to be.

Goswami acknowledges the SAC results will never be a perfect match to site conditions because there are too many unknowns (i,e., lack of historical records). He says that while the SAC does not have to be perfect, "[u]nder the current limited realizations and uncertainties and identified improvements/data gaps that need to be addressed, the current results of the SAC have very limited value in making site specific as well as site wide decisions on remediation, risk and impact assessment." (Second Goswami Affidavit at pp. 10-11, Paragraph S).

In her first affidavit, Dahl-Crumpler contends as follows:

> The HSW EIS makes an incomplete attempt to tie cumulative results to individual sites. The EIS attempted to satisfy the cumulative analysis requirement by cobbling the individual site modeling with composite analysis that was previously done to model the impacts from placing . . . (ILAW) . . . in the . . . (IDF) . . . near to the existing Plutonium-Uranium Extraction (PUREX) Facility on the Hanford Site. The results of a 2001 performance assessment made for siting the IDF near PUREX assumed no technetium-99 removal from the ILAW through pre-treatment at the Hanford [WTP]. The assessment was super-imposed directly onto the results of other waste categories calculated for the HSW EIS at the 200 East and West Areas and the Environmental Restoration Disposal Facility in alternatives A, C, D1 (the preferred alternative), and E3. Further, for the location near PUREX and the 200 East Low Level Burial Grounds (LLBG), ILAW results were superimposed on the 200 East Areas Southeast Line of Analysis (LOA) only, not the 200 East Northwest Line of Analysis. HSW EIS, Vol. I, ¶ 3, p. 5.40. **However,**

> **the composite analysis appears to have assumed all the new disposal waste sites will be sited in the 200 West Area.**[30] HSW EIS, Table L.1, p. L.10. The original [SAC] release design did not include ILAW or melters because they released after 1000 years. HSW EIS p. L.7. The initial assessment assumed a technetium-99 inventory using a fuel-ratio method for fission product inventories, while the new HSW EIS inventories include only reported or recorded values. HSW EIS Table L.1, n.c. This makes it extremely difficult to examine the groundwater impacts of the IDF location (in the 200 East Area) in conjunction with the cumulative or composite analysis.

(First Dahl Crumpler Affidavit at pp. 19-20, Paragraph JJ)(emphasis added).

Mr. Kincaid's response is at pp. 20-21 of his affidavit, Paragraph 43:

> [T]he method of superimposing groundwater transport simulations to incorporate multiple sources into an analysis is a common and accepted method. The sum of the impact from individual sources is the total impact of all sources in this groundwater impact analysis. Ms. Dahl-Crumpler's statement ignores the significant effort and analysis that has been undertaken, the desire to maintain consistency with prior published work, and the technical acceptability of the method used to incorporate ILAW glass impact. Contrary to Ms. Dahl-Crumpler's assertion, the 2001 ILAW PA . . . was not published in support of siting the IDF near the PUREX facility [in the 200 East Area], and technetium-99 was separated from the low-activity waste stream to reduce the technetium-99 content in the ILAW glass evaluated in that report. In the HSW EIS, unit release calculations presented in the 2001 ILAW PA were scaled to the inventories presented in Vol. II, Appendix L, Table L.1 at L.10 and superimposed on the cumulative analysis of all other sources. A benefit of superimposing the ILAW glass impact on the simulation of all other sources is that one is able to distinguish the ILAW contribution to impact. . . .

In her second affidavit, Dahl-Crumpler does not respond directly to any statements made

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[30] That is true. Kincaid states:

> Secondary waste streams from the separation and treatment of tank waste were analyzed as disposed in the 200 West Areas solid waste burial grounds. These were the logical and accepted locations when the cumulative analysis was designed and simulated in the Fall of 2002 and early Winter of 2003, since the 200 West Area was the focus of future disposal planning.

(Kincaid Affidavit, pp. 12-13, Paragraph 26).

by Kincaid, including his statement that 2550 curies of technetium-99 and 40.5 curies of iodine-129 in grouted secondary waste disposed at the IDF site would not influence peak water quality and human health predictions since the peak impacts occur immediately after site closure and releases from grouted waste occur later. She does, however, make it clear that she continues to consider "superimposed modeling" to be a "problem," and reiterates her belief that the SAC assessment does not model secondary waste disposal at IDF:

> Mr. Collins notes a passage in the HSW EIS in which an "additional inventory" of 64.2 curies of iodine-129 in grouted secondary waste is assumed for cumulative impacts purposes, but to the best of my understanding, for the purposes of cumulative impact analysis in the . . . (SAC) model, that amount is assumed to buried in Hanford's 200 *West* Area. The significance of this is that the IDF facility. where secondary waste will actually be disposed, is to be sited in Hanford's 200 *East* Area. As a result, the SAC assessment does not model secondary waste disposal *at IDF*, where it is to be disposed together with other volumes of Hanford waste. This illustrates the problem of superimposed modeling identified in my original affidavit . . . .

(Second Affidavit of Dahl-Crumpler at p. 7, Paragraph N)(emphasis in text).

Mann, however, offers this explanation:

> The additional inventory of iodine-129 was modeled as being disposed in grouted solid waste in the 200 West Area of the Hanford Site. [Citation omitted]. The inclusion of this amount of additional iodine-129 provided a conservative assessment of the effects of waste disposal in grout form at Hanford. The hydro-geologic characteristics of the 200 West Area are such that disposal there results in higher calculated groundwater impacts than disposals that take place in the 200 East Area. Thus, the cumulative analysis provides an evaluation of impacts using a bounding analysis. Therefore, the HSW EIS contains an evaluation of impacts of iodine-129 that greatly exceeds, and bounds the amount of iodine-129 that is currently estimated will be included in grouted waste.

(Mann Affidavit at pp. 7-8).

Kincaid echoes Mann:

> The cumulative analysis of 64.2 curies of iodine-129 in grouted waste in the 200 West Area burial grounds is conservative in two ways. First, the inventory is equivalent to the 1997 estimate of all iodine-129 produced and processed in the 200 Areas, and it is substantially greater than the estimate updated in 2002.
>
> Second, based on the results in the HSW EIS analysis of alternatives, it is reasonable to conclude that the impacts to groundwater from solid waste disposals are greater for

> the 200 West Area than the 200 East Area [where IDF is to be located near the existing PUREX facility].

(Kincaid Affidavit at pp. 13-14, Paragraphs 29-30).

d) Summary

Obviously, the groundwater analysis of the Hanford Site is an enormous, technically complex undertaking. "Uncertainty" is a given in this analysis because certainty can never be achieved. The groundwater analysis strives for an intelligent estimate of impacts because that is the best that can be sought.

Federal agencies, in complying with NEPA, are "normally entitled to rely upon the **reasonable** views of their experts over the views of other experts." *Ground Zero Center for Non-Violent Action v. U.S. Dept. of Navy*, 383 F.3d 1082, 1090 (9th Cir. 2004)(emphasis added). There is a stronger level of deference to an agency regarding factual or technical matters. *Surfrider Foundation v. Dalton*, 989 F.Supp. 1309, 1319-20 (S.D. Cal. 1998). "Deference to an agency's technical expertise and experience is particularly warranted with respect to questions involving . . . scientific matters." *Westlands Water District v. Alpine Land Reservoir Co.*, 887 F.2d 207, 213 (9th Cir. 1989). The "reasonableness" test does not require proof that DOE's experts will ultimately be proven "correct" in their findings and conclusions. At the same, time "deference" does not mean this court can abdicate its obligation to independently assess "reasonableness" and simply take for granted the word of the DOE experts. The parties would have to agree since they filed numerous expert affidavits which they deemed relevant to the inquiry and which they clearly intended the court to examine.

By and large, this court believes DOE experts have offered reasonable responses and explanations to the criticisms and questions raised by the State's experts, some of which are nothing more than second-guessing. For reasons discussed above, the court concludes the State has not raised a "serious question" about the adequacy of the groundwater analysis with regard to hazardous chemical waste. The State does not have a fair chance of establishing DOE acted arbitrarily and capriciously in arriving at its findings and conclusions regarding groundwater impacts from hazardous chemicals in waste already buried at Hanford. Accordingly, the court

also believes DOE took the requisite "hard look" at the hazardous waste implications of transporting offsite LLW and MLLW to Hanford.

The court does, however, have a lingering concern with regard to iodine-129 impacts from tank waste processing. Because of apparent inconsistencies in DOE's iodine-129 estimates, the court believes the State has earned at least a limited opportunity to conduct some discovery to ascertain the basis for the apparent inconsistencies (i.e., assumptions about grout performance) and whether that affects the reasonableness of DOE's analysis. The State's expert, Dahl-Crumpler, says:

> In assessing why the HSW EIS and the Supplemental ILAW Risk Assessment reach such radically different conclusions, it is important to know whether there [are] other assumptions like grout performance that are drastically different in the HSW EIS from other Hanford documents such as [the] Supplemental ILAW Risk Assessment, and what the impacts are of DOE potentially 'cherry picking' from the known ranges for these assumptions. The assumptions are generally 'buried' in the appendices to the documents and ranges for the values are generally not presented. It is therefore hard to find the assumptions and "ground them" with known ranges.

(Second Dahl-Crumpler Affidavit at p. 14, Paragraph Y).

The court's concern with regard to technetium-99 is significantly less and the reasons for that should be apparent from the discussion *supra*. Because, however, the court is permitting discovery regarding the iodine-129 estimates, the court will also allow discovery regarding the technetium-99 estimates considering they both involve secondary waste from tank waste processing.

The aforementioned statement by Dahl-Crumpler was made in an affidavit dated December 8, 2004. It is the court's assumption, and presumably a reasonable one, that since December 2004, the State and its experts have continued to scrutinize the HSW EIS groundwater analysis. For this reason, the court would expect that a 90 day discovery period is sufficient for the State to seek the information it desires with regard to the iodine-129 and/or technetium-99 estimates. At this time, the court finds there is a "serious question" about the adequacy of the groundwater analysis with respect to iodine-129 impacts.

Currently, the court believes there is not a "serious question" whether DOE acted

reasonably in employing "superimposed modeling" in the SAC or in running only 25 realizations of the SAC. These issues, however, will be revisited, if necessary, based on what the State discovers regarding the iodine-129 and/or technetium-99 estimates.

B. TRU

On January 24, 2005, this court ruled as a matter of law on summary judgment that the TRUM exemption in the 1996 WIPP Land Withdrawal Act Amendments applies exclusively to WIPP. It is evident that DOE is already in violation of the HWMA storage prohibition by virtue of TRUM already stored at Hanford, and that adding offsite TRUM would only exacerbate the violation. As such, this is a basis, independent of NEPA, justifying continuation of a preliminary injunction against shipments of TRUM to Hanford.

DOE notes that following entry of a final judgment on the HWMA claim, it will be subject to an enforceable schedule in the HFFACO for certifying quantities of TRUM each year for shipment to WIPP, including the quantities of TRUM at Battelle. Therefore, DOE contends the balance of harms no longer favors the State on this issue and that an injunction, at least against the Battelle TRUM, is not warranted. The fact is, however, that a final judgment has yet to be entered on the HWMA claim. Nevertheless, the court is not entering a permanent injunction at this time, partly because there is no final judgment and furthermore, a permanent injunction may ultimately not be warranted because existing HWMA violations are remedied or because of other factors. The issue regarding importation of TRUM in light of the previous HWMA ruling has arisen somewhat as an afterthought in a flurry of argument and briefing at the tail end of this recent round of NEPA litigation. The court is hesitant to make a ruling regarding a permanent injunction without a more complete and orderly airing of the parties' respective arguments. The court will not, however, hold up addressing the pending NEPA issues for that purpose. A continuing preliminary injunction on the TRUM strikes the proper balance for the time being.

Of course, there is also non-mixed transuranic waste (TRU) which is not subject to the HWMA and so any injunction against shipment of non-mixed TRU to Hanford must be on the

basis of NEPA. In issuing the May 2003 preliminary injunction, this court found it difficult to ignore the argument that: 1) DOE intended the 2002 Draft HSW EIS (the forerunner to the 2004 Final HSW EIS) to constitute the future sitewide or project-level NEPA review alluded to in both the May 1997 WM PEIS and the January 1998 ROD; and 2) that the Draft amounted to an acknowledgment by DOE that additional NEPA review was necessary before it could ship TRU to Hanford. The State conceded at that time that "a sufficient Final HSW EIS covering the site-specific impacts of treating and storing offsite TRU at Hanford and updating transportation risks would satisfy DOE's NEPA obligation." (Preliminary Injunction Order, Ct. Rec. 64 at p. 18). The State contends the HSW EIS still does not adequately address site-specific impacts of shipping offsite TRU and moreover, that the PEIS remains an inadequate basis for selecting Hanford in the first instance as a location for treatment and/or storage and processing of TRU pending shipment to WIPP for disposal.

DOE seeks to have the preliminary injunction dissolved, contending the HSW EIS cures all of the potential deficiencies of the PEIS which this court cited in issuing the injunction (inadequate analysis in PEIS of site-specific impacts of treating and/or storing and processing offsite TRU at Hanford; inadequate analysis in PEIS of transportation risk, including terrorism risk; inadequate analysis in PEIS of scenario where Hanford treats and/or stores and processes all 1,557 cubic meters of TRU currently stored at other DOE sites). The State does not dispute that those particular deficiencies have been resolved by the HSW EIS. Rather, the State now contends certain other deficiencies are apparent from the HSW EIS itself which warrant continuation of the preliminary injunction against shipments of offsite TRU to Hanford. According to the State, "a careful review of the analysis DOE included in the HSW EIS, particularly with respect to remote-handled transuranic waste, transuranic waste in large containers, and PCB-commingled transuranic waste reveals that DOE still has failed to take a 'hard look' at the site-specific impacts associated with its plans for managing transuranic waste at Hanford, including off-site transuranic waste that DOE intends to ship to Hanford from other facilities." The State notes that Hanford currently lacks the capacity to process RH-TRU, transuranic waste in non-standard containers, and PCB-commingled waste. Although the HSW

EIS considers whether to construct a new facility or to modify the existing T plant facility to establish the capabilities to treat/process these wastes, the State contends it does not contain sufficiently detailed information about exactly what would occur at these facilities to allow the State and the public to understand the operations contemplated and the associated impacts.

Section 4.2 of the HSW EIS Summary at p. S.22 states:

> TRU waste requires processing before it can be sent to the Waste Isolation Pilot Plant for disposal. Processing activities include activities such as repackaging, characterization, and certification that the waste meets the Waste Isolation Pilot Plant waste acceptance criteria. Under current plans, we will manage contact-handled and remote-handled TRU wastes differently. Most newly generated and retrievably stored contact-handled TRU waste would be sent to Hanford's Waste Receiving and Processing Facility [WRAP] for processing and certification. Remote-handled TRU waste and oversized containers of TRU waste would continue to be stored at the T Plant Complex, the Central Waste Complex, and the Low Level Burial Grounds until we develop processing and certification capabilities for those wastes. We anticipate that the Waste Isolation Pilot Plant will be able to begin receiving remote-handled TRU waste by about 2006.[31]

1) Adequacy of WM PEIS Re Selection of Hanford As Site for Treatment And/Or Processing and Interim Storage of Offsite TRU Pending Disposal at WIPP

The State's 2003 statement that "a sufficient Final HSW EIS covering the site-specific impacts of treating and storing offsite TRU at Hanford and updating transportation risks would satisfy DOE's NEPA obligation" is not considered a waiver of any challenge to the PEIS selection of Hanford as a way station for TRU. In the May 9, 2003 preliminary injunction order, nothing was said from which DOE could reasonably infer this court found the State had less than a fair chance of proving the PEIS was inadequate in its selection of Hanford. That specific issue was not raised by the State in its motion for preliminary injunction. All the State argued was that

[31] "Treatment" is distinct from processing and certification. Treatment of TRU at Hanford would potentially allow for disposal of the same at Hanford. Processing and certification of TRU at Hanford is for the purpose of insuring the TRU is ready for disposal at WIPP in New Mexico. Disposal at WIPP is intended to be in lieu of treatment.

there was an inadequate assessment of the site-specific impacts at Hanford and that the PEIS contemplated there would be such site-specific assessment (sitewide review) before offsite TRU would be sent to Hanford. Besides that, the court has been obliged to analyze the PEIS with regard to selection of Hanford as a regional disposal site for LLW/MLLW and the analysis is much the same with regard to the selection of Hanford as a way station for TRU.

The PEIS considered that TRU would be managed, or potentially managed, at 13 major sites, including Hanford. (PEIS Summary at p. 60). The PEIS considered the existing and anticipated volumes of TRU at each of the sites and analyzed the following impacts of managing TRU at each of those sites: 1) health risks; 2) air quality impacts; 3) economic and population impacts; 4) infrastructure impacts; 5) costs; and 6) water resources, ecological resources, environmental justice, land use, and cultural resources impacts. (*Id*. at p. 64-68). Chapter 8, Vol. 1 of the PEIS, contained the analysis of these impacts:

> Chapter 8 describes the environmental consequences associated with the No Action, Decentralized, Regionalized, and Centralized Alternatives for transuranic waste . . . . This chapter provides information on existing and anticipated TRUW[32] volumes, and existing and planned facilities available at DOE sites. This is followed by an overview of the analysis and assumptions relating to TRUW characteristics, the treatment and technologies considered, and the rationale for selecting the specific sites analyzed under each alternative. This chapter discusses the health risk, environmental impacts, and costs of the alternatives and provides a comparison of the alternatives.

For example, under "Health Risks," the PEIS estimated the "Number of Cancer Incidences and Genetic Effects" for each alternative. It noted that the "greatest numbers of estimated cancer incidences resulting from treatment of TRUW to meet LDRs [land disposal restrictions] occur in the offsite populations at LANL [Los Alamos National Laboratory] and Hanford under Regionalized Alternative 2 and Hanford under Regionalized Alternative 3." (*Id*. at 8-34). It added that:

> LANL, Hanford, and WIPP are the only sites that have an estimated incidence of at least one cancer in the offsite population as a result of radiation exposure. Treatment

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[32] "TRUW" is interchangeable with "TRU."

> to meet LDRs is forecast to cause this at Hanford and WIPP predominantly because of plutonium-238 . . . . Mitigation of emissions from thermal treatment of these radionuclides may be accomplished through application of alternative treatment concepts when these become available, or by enhancing off-gas treatment systems, if these alternatives are selected. Specific measures would be evaluated in site-wide or project-specific NEPA reviews [i.e., the HSW EIS].

(*Id*.).

There are other examples. The consequences of storage and treatment facility accidents were calculated for six sites, including Hanford. (*Id*. at pp. 8-43 to 8-48). The PEIS evaluated air quality impacts at each of the proposed TRU treatment sites, including Hanford, "on the basis of estimated increases in emissions of . . . six criteria air pollutants, hazardous air pollutants (which include radionuclides), and toxic air pollutants." (*Id*. at p. 8-48). Emissions from TRU facility construction and operation and maintenance activities were also estimated. (*Id*.).[33]

The PEIS was issued in 1997 and contained DOE's broad vision of how the nation's nuclear waste should be managed. It readily acknowledged that further sitewide and project-level reviews would be necessary to evaluate particular impacts at specific sites such as Hanford. That does not necessarily mean, however, that selection of Hanford under the PEIS was "arbitrary and capricious." Sitewide review, such as the HSW EIS issued in 2004, provided an additional opportunity for DOE to consider the specific impacts of treating and/or processing and storing offsite TRU, and for the public to weigh in on whether it was appropriate for Hanford to accept offsite TRU.

As with the PEIS selection of Hanford as a regional disposal site for LLW and MLLW, this court concludes there is not a "serious question" about the adequacy of the PEIS as a basis for selecting Hanford to accept offsite TRU. Particularly with regard to TRU, all the State does is reiterate arguments about inadequate evaluation of site-specific impacts at Hanford. The State never says exactly how the PEIS is inadequate in comparing sites for treatment and/or processing

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[33] "Impacts to groundwater quality from disposal of TRUW were not evaluated because disposal of TRUW is not within the scope of the WM PEIS." (PEIS at 8-56).

and interim storage of TRU, but simply focuses on what it says is the failure of the PEIS to consider the site-specific impacts at Hanford. Therefore, what the State really challenges is the adequacy of the HSW EIS.

2) Adequacy of HSW EIS Re Site-Specific Impacts at Hanford of Treating And/Or Processing and Interim Storage of OffSite TRU Pending Disposal at WIPP

Melinda J. Brown is the External Budget Analyst for the Department of Ecology's Nuclear Waste Program. She is also the State Environmental Policy Act Coordinator for the Nuclear Waste Program. She observes that Hanford currently lacks the capacity to process RH-TRU, TRU in non-standard containers, and PCB-commingled waste. (HSW EIS, Vol. 1 at Section 2.1.3.3: "No capabilities currently exist on the Hanford Site to treat PCB waste. The wastes are expected to remain in storage in CWC [Central Waste Complex] until a treatment facility is available or until WIPP can accept such materials"; Section 2.1.3.5: "The Hanford Site does not currently have a facility where these wastes [CH-TRU in non-standard containers] can be prepared for shipment to WIPP. Until they can be processed they will remain in the CWC; Section 2.1.3.6: "The Hanford Site does not currently have a facility where the RH TRU can be prepared for shipment to WIPP, nor are the WIPP waste acceptance criteria or shipping system in place"). In some alternatives considered by the HSW EIS (A, C, D and E to be specific), the T Plant Complex would be modified to establish the capabilities to treat/process TRU waste for which no treatment capability currently exists, including RH-TRU, CH-TRU in non-standard containers, and PCB-commingled TRU. (HSW EIS Vol. 1 at p. 2.22:. "Specific capabilities provided by this modified T plant would include stabilization, macroencapsulation, deactivation, sorting, sampling, repackaging NDE [nondestructive examination], and NDA [nondestructive assay])." As an alternative to modifying the T Plant, DOE also considered (under Alternative B) constructing a new facility for treatment/processing of TRU which would have all of the capabilities identified for the modified T Plant. (*Id*. at p. 2.23). "The new facility location is assumed to be in the 200 West Area near WRAP, consistent with previous DOE proposals for a modular complex to process MLLW and TRU waste" and it "would be expected

to be larger than WRAP." (*Id.*). DOE acknowledges that processing of PCB-commingled waste and CH-TRU in non-standard containers will not commence until 2013, and that processing of RH-TRU will not commence until 2015. (HSW EIS, Vol. II, Table B.3 at p. B.8).

Ms. Brown asserts the HSW EIS "fails to contain information about exactly what would occur at these facilities in sufficient detail to enable Ecology and the public to understand the operations contemplated and the associated impacts." She says that the HSW EIS does not: 1) include a complete list of the treatment processes that would occur at a modified T Plant or a new facility; 2) provide any detailed description of the treatment processes that would be conducted; 3) describe the methods that would be used to manage the processed TRU prior to shipment to WIPP; 4) indicate the process that would be used to designate a portion of the waste MLLW; 5) and contain any detailed information concerning secondary wastes that would be generated during the treatment and processing of RH-TRU.

DOE disputes that for environmental analysis to be adequate, every detail of the processing of waste must be known and set forth.[34] DOE notes that "when new facilities must be constructed or existing facilities modified, their exact configuration and content cannot be known at the time an EIS is prepared." DOE says detailed design will not take place until it reaches a decision as to whether in fact modify the T Plant or build a new facility. Indeed, it may be that if the T Plant is modified or a new facility is constructed, DOE will have to prepare a project or facility level NEPA review analyzing the environmental impacts from the project.

There appears to be no dispute by the State that DOE currently has the capacity to store offsite TRU. The State does not contend that existing storage facilities do not make the environmental grade. The State's fear is that offsite TRU will be brought into Hanford and left there to sit indefinitely while DOE figures out exactly what it is going to do to enable Hanford to treat/process RH-TRU, CH-TRU in non-standard containers, and PCB-commingled TRU.

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[34] DOE quotes *Natural Res. Def. Council, Inc. v. Callaway*, 524 F.2d 79, 88 (2nd Cir. 1975): "A government agency cannot be expected to wait until a perfect solution of environmental consequences of proposed action is devised before preparing and circulating and EIS." A "perfect solution" is not necessary. A "reasonable" one is, however.

The State observes that in the 2004 "Transuranics ROD," DOE cites as one of its reasons for bringing offsite TRU to Hanford that "[t]he Hanford Site's planning for facilities and operations to characterize, certify and package RH-TRU is also well underway." A footnote thereto (n. 4) indicates the HSW EIS "analyzed construction of new (sic) and modification of existing facilities to characterize and prepare RH-TRU waste at the Hanford Site." 69 *Fed. Reg.* at 39448. The State submits an affidavit from Laura J. Cusack, the Nuclear Waste Program TPA [Tri Party Agreement] Administrator for Ecology who says that despite publication of the HSW EIS, "DOE has still not shared with the State detailed plans for treating or processing RH waste, including RH-waste that DOE now intends to ship to Hanford." (Second Cusack Affidavit, Ct. Rec. 216 at p. 3, Paragraph F).

"The Hanford Site's planning for facilities and operations to characterize, certify and package RH-TRU" is not the only reason for sending TRU to Hanford, and Battelle West Jefferson TRU in particular. There are other reasons set forth in the Transuranics ROD, notably Hanford's storage capabilities:

> DOE needs to ship its TRU waste from the West Jefferson site in order to complete the cleanup of contaminated facilities at this site in a timely manner. The TRU waste is predominantly RH-TRU waste, which cannot be presently accepted at WIPP for disposal. Continued storage of the TRU waste on the West Jefferson Site until WIPP is ready to receive the RH-TRU waste (estimated to be in the 2006 time frame) may require construction of a new, shielded facility licensed by the State of Ohio and the NRC [Nuclear Regulatory Commission]. Construction of a new facility could not be completed by the West Jefferson scheduled closure date of December 2005. Also, building a new facility would divert funding away from necessary clean-up activities, be inconsistent with DOE's goal of early removal of radioactive waste from privately owned sites, and result in additional costs for decontaminating and decommissioning the storage building. DOE thus needs to ship the TRU waste to another DOE site that has the requisite remote-handling **and storage capabilities**. In addition, DOE needs to ship the West Jefferson CH-TRU waste to a DOE site having the capabilities to process and certify CH-TRU waste for WIPP in order to avoid the cost required to establish such capability at West Jefferson, particularly for such a small waste volume.
>
> . . . DOE's Hanford Site offers a practical, safe, and secure location for **storing** the TRU waste from West Jefferson. Hanford is certifying and shipping CH-TRU waste according to WIPP's Waste Acceptance Criteria and applicable state and federal regulations. RH- and CH-TRU waste have been, are being, and will be managed at Hanford, which has trained

> waste management personnel **and storage capacity** for TRU waste at waste management facilities located in the 200 Area of the site.

(69 *Fed.* Reg. at 39448)(Emphasis added).

Furthermore, the HSW EIS lists the processes that will occur at the T Plant. The State provides no scientific basis for assuming these processes would be different or have different impacts than their current uses. Ms. Brown is an administrator, not a scientist. Her concerns about the inadequacy of the HSW EIS regarding processing of RH-TRU, CH-TRU in non-standard containers, and PCB-commingled TRU amount to nothing more than speculation. The HSW EIS contains detailed information concerning secondary wastes that would be generated during the treatment and processing of RH-TRU. Appendix B of the HSW EIS (Vol. II) presents flow diagrams for all the waste streams being analyzed, including TRU. The assumptions for the management of TRU in Alternative Group D are presented in Table B.3, while pages B.87 through B.90 present the volumes of TRU being processed and the volumes of LLW and MLLW that may result at the end of the processing (going to the "modular combined-use disposal facility").

With regard to the new waste processing facility and modified T Plant Complex, the HSW EIS states:

> Handling wastes in the new waste processing facility and the modified T Plant Complex would be conducted in a manner similar to that in the WRAP except that some operations would be performed remotely. Therefore, the release fractions applicable to the WRAP were also used to estimate releases from waste processed in the new waste processing facility and the modified T Plant Complex.

(HSW EIS, Vol. II at Section F.1.1.3, p. F.21).[35] Ms. Brown contends this is "a non-conservative assumption, because the new processing facility or T Plant would be managing non-standard containers and remote handled wastes with higher concentrations of radionuclides" and "[s]uch

[35] DOE anticipates that it will be able to use mobile TRU waste processing facilities, also known as Accelerated Processing Lines (APLs), to process CH-TRU in non-standard containers: "The facilities are being developed in stages or modules so that the first module will process standard 55-gal drums and a second module will process larger boxes." (HSW EIS, Vol I, Section 2.2.2.2 at p. 2.19).

concentrations in different packagings would be expected to be released differently than wastes are released from drums in WRAP." (Second Brown Affidavit, Ct. Rec. 215 at p. 6, Paragraph P). Brown asserts the waste that would be handled at a new processing facility or T Plant would pose a "potentially greater threat to human health and the environment than the waste handled in WRAP." (*Id*., Paragraph Q). Once again, this is unscientific speculation. The State conclusorily disagrees with the results of the emissions analysis and offers no scientific basis for its disagreement. Furthermore, DOE readily acknowledges that its analysis shows impacts of emissions from a modified T Plant, while small, will be greater than impacts of emissions from WRAP. (HSW EIS, Vol. I at pp. 5.202-5.204, Tables 5.67-5.69).

The State has not identified how the storage of TRU at Hanford until processing can take place presents some environmental risk which DOE did not adequately analyze or of which it did not inform the public.[36] The State's concern is when processing of RH-TRU, PCB-commingled TRU and CH-TRU in non-standard containers will take place, and the impacts of said processing. While at this point, DOE's plans regarding processing may not be fully formulated, it is not reasonable to expect DOE to have them fully formulated. In the HSW EIS, DOE has done a reasonable job of explaining what it is likely to do and the anticipated impacts thereof. The State merely engages in unscientific speculation about potential impacts.

There is not a "serious question" about the adequacy of the HSW EIS regarding its analysis of site-specific impacts of shipping offsite TRU to Hanford.

C. BALANCE OF HARDSHIPS AND PUBLIC INTEREST

Because the State has raised at least one "serious question" about DOE's compliance with NEPA with regard to its intention to ship offsite LLW/MLLW to Hanford, it is necessary to consider whether the balance of hardships and the public interest favor the State so as to warrant a preliminary injunction.

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[36] And again, with regard to TRUM, the RCRA/HWMA treatment standards and storage prohibitions are effective.

There are no "serious questions" about DOE's compliance with NEPA with regard to its intention to ship TRU to Hanford and therefore, on that basis alone, a preliminary injunction against shipment of that waste is not warranted. Nevertheless, the court will consider whether the balance of hardships and the public interest favor the State with regard to the proposed shipment of TRU to Hanford.[37]

The State asserts "[t]he balance of hardships and public interest prongs of the preliminary injunction test are entirely unaffected by the new facts and should not be revisited by the Court." The court fails to see how this is possible because of the relatedness of the potential harm consideration with the likelihood of success on the merits consideration (i.e., the greater the likelihood of success on the merits, the less that must be shown in the way of potential harm; conversely, the lesser the likelihood of success on the merits, the more that must be shown in the way of potential harm).

The State contends the "balance of hardships" tips sharply in its favor, and the public interest is in its favor, because once offsite TRU and LLW/MLLW arrives at Hanford, it will likely stay there regardless of the final outcome of the litigation on the merits.[38] The State cites to the May 9, 2003 preliminary injunction order which stated: "In the absence of an injunction, the balance of the Battelle TRUW . . . will be shipped to Hanford and regardless of the outcome of further proceedings in this court or before the Ninth Circuit, it will likely remain at Hanford. On the other hand, it appears DOE is not precluded from making reasonable interim adjustments to a preliminary injunction." The State says the same is true with regard to DOE's proposed shipment of offsite LLW/MLLW to Hanford for disposal. Of course, the aforementioned preliminary injunction was issued before the Final HSW EIS which addresses, in considerably more detail than the PEIS, the site-specific impacts of shipping TRU and LLW/MLLW to

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[37] As discussed, however, an injunction will remain against shipment of offsite TRUM to Hanford in light of the court's prior HWMA ruling.

[38] The State says it would be impractical to return it to the originating facilities and in some cases, those originating facilities may no longer exist.

Hanford.

Hanford is the intended final resting place for offsite LLW/MLLW. Not so with regard to offsite TRU which is to be stored at Hanford, processed at some point, and ultimately sent off to WIPP for disposal. DOE notes that the 25 cubic meters of RH-TRU which it intends to ship to Hanford from Battelle constitutes a mere 1% of the RH-TRU already present at Hanford (2,157 cubic meters). (HSW EIS, Vol. I at p. 3.20). Indeed, even if DOE ultimately ended up sending the entire 1,557 cubic meters of offsite TRU to Hanford, that is very small in comparison to the nearly 46,000 cubic meters of TRU already at Hanford and expected to be generated there in the future.

LLW/MLLW is a different story. The volume of LLW currently at Hanford or expected to be generated there is 128,698 cubic meters. The volume of MLLW currently at Hanford or expected to be generated there is 58,414 cubic meters. The June 23, 2004 HSW EIS ROD limits offsite shipments to 62,000 cubic meters of LLW and 20,000 cubic meters of MLLW. DOE has also set a lower ceiling of 13,000 cubic meters total (both LLW and MLLW) until the IDF becomes operational around 2007 (of which no more than 5000 cubic meters will be MLLW). DOE has not foreclosed the possibility, however, that it could issue additional RODs sending even more LLW and MLLW to Hanford so that a grand total of 219,663 cubic meters of offsite LLW and 140,435 cubic meters of offsite MLLW would be sent there for disposal.

The State expresses concern about DOE's ability to fund cleanup in the future, in particular funding for the proposed IDF to dispose LLW and MLLW, and funding for the modified T Plant or a new facility to process RH-TRU, PCB-commingled TRU, and CH-TRU in non-standard containers. The State says that because there are no guarantees DOE will secure the funds necessary to undertake this work, the State should not have to bear the risk of this additional waste coming to Hanford. There is no doubt the projects proposed by DOE are very expensive. In her first affidavit (Paragraphs I-L, pp. 4-5), Ms. Brown contends DOE "has not consistently requested sufficient funds to complete all work required by HFFACO" and offers some examples of that from 2000 to 2003. She does not claim, however, that these funding issues were not ultimately worked out to the State's satisfaction, nor does she claim that

currently one or more HFFACO milestones have not been timely met because of lack of funding.[39] Furthermore, it bears noting that the State can seek to enforce DOE's commitments under the HFFACO, specifically those pertaining to the budgetary process. (Ex. 1 to First Affidavit of Brown, Ct. Rec. 104 at Paragraphs 148 and 149).

For its part, DOE says a concern over future funding is not evidence of irreparable injury. DOE notes that this court has previously recognized in *Heart of America Northwest v. Westinghouse Hanford, Co.*, 820 F.Supp. 1265, 1281 (E.D. Wash. 1993), that the HFFACO calls for DOE to fund all of its obligations. DOE says it has complied with those obligations and "will continue to seek sufficient funding to ensure continued compliance with the regulatory commitments guiding the cleanup of the Hanford site." DOE's "commitment" to seek adequate funding is important. Of course, Congress has to deliver the funding, but one can only speculate if and when that might become an issue and therefore, this does not factor into the court's consideration of the existing balance of hardships and the public interest.[40]

In May 2003, this court found the balance of hardships tipped sharply in favor of the State. (Preliminary Injunction Order at pp. 32-35). Some of the hardships for the State which were identified still exist. One exception appears to be the transportation risk which the HSW EIS evaluated and found there was no significant risk. Although in 2003 the State challenged the transportation risk analysis (or lack thereof) in the PEIS, it does not now challenge the more

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[39] Janis Ward, Lead Budget Analyst for the Environmental Management Programs for DOE, Richland Operations Office (RL), claims that "[e]ach year RL requested sufficient funding to meet HFFACO compliance schedules . . . ." (Ward Declaration, Ct. Rec. 164 at p. 3, Paragraph 8). She adds that "[a]t no time to my knowledge has RL requested less than the funding necessary to accomplish HFFACO schedules." (*Id*. at p. 4, Paragraph 15).

Jennifer L. Sands, Lead Budget Analyst for DOE, Officer of River Protection (ORP), from December 1999 through February 2004, says that to her knowledge, at no time has ORP requested less than the funding necessary to accomplish HFFACO compliance schedules. (Sands Declaration, Ct. Rec. 167 at p. 5, Paragraph 16).

[40] The HFFACO gives DOE the option of declaring a "force majeure" and not complying with HFFACO commitments where there is insufficient availability of appropriated funds. (See Ex. 5 to First Affidavit of Melinda J. Brown).

detailed analysis contained in the HSW EIS. In any event, the court finds that since May 2003, the hardships for DOE have increased relative to the hardships for the State and therefore, the balance of the hardships with regard to shipment of offsite TRU to Hanford no longer tips sharply in favor of the State. Furthermore, the public interest no longer favors the State.[41]

It has now been almost two years that DOE has been sitting on the TRU waste it proposes to send from Battelle West Jefferson to Hanford. According to Dr. Ines Triay, DOE's Deputy Chief Operating Officer for Environmental Management:

> The remaining inventory of TRU waste at the Battelle Columbus Laboratory remains staged awaiting DOE's ability to ship it offsite, and its presence onsite is directly impacting DOE's ability to complete the cleanup and the owner's ability to terminate its NRC license. Through the decommissioning process, the total volume of the original 27 cubic meters (including the 5 shipped) has increased to approximately 42 cubic meters, such that approximately 37 cubic meters remain onsite awaiting shipment to Hanford. Because the existing injunction prevented shipment and the presence of the TRU waste in the hot cell was impeding DOE's effort to remediate (sic) the facility, DOE was forced to construct a temporary staging area so cleanup work could proceed. This action required the coordination and approval of the Ohio Environmental Protection Agency and the Nuclear Regulatory Commission. This onsite storage is licensed through December 2005. The Battelle Columbus Laboratory Decommissioning Plan commits to the cleanup, completion and offsite shipment of . . . all DOE-owned wastes. If TRU waste must remain onsite, construction of a new storage facility would require a new NRC permit by Battelle Memorial Institute, which owns the laboratory. As a newly constructed facility, it would be subject to all NRC requirements for new facilities. Transfer of the RH TRU waste to a new facility would initiate RCRA storage requirements for the portion of the inventory containing hazardous constituents. The total cost of keeping the project open beyond 2006 is not included within DOE's baseline and would require Congressional appropriation of funds specifically due to the extension beyond the planned 2006 closure date. Despite DOE's efforts to identify alternate receiving sites, there currently are none that support the December 2005 regulatory requirement within the Decommissioning Plan.
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> DOE currently has not made any decisions to consolidate further inventories of TRU waste at Hanford. However, the nature of the

[41] The preliminary injunction order was not a final judgment on the merits, although it was an appealable interlocutory order. Accordingly, res judicata and collateral estoppel do not apply. *Klickitat Co. v. Columbia River Gorge Comm.*, 770 F.Supp. 1419, 1426 (E.D. Wash. 1991).

> cleanup work may result in the generation and/or identification of very small volumes of transuranic waste at other closure sites where it may not be possible to characterize and prepare the waste for direct shipment to WIPP. In these cases, the inability to consolidate such wastes at Hanford would directly impact DOE's ability to complete site cleanup and meet its regulatory commitments and satisfy Congress' mandated closure goals.

(October 18, 2004 Triay Declaration, Ct. Rec. 178, at Paragraphs 9 and 10).

The fact is that no DOE site has the current capability to certify RH-TRU, nor process PCB TRU, nor process CH-TRU in non-standard containers. And right now, Battelle cannot even certify CH-TRU in standard containers for disposal at WIPP (Triay Declaration, Ct. Rec. 178, Paragraph 7), whereas Hanford can and has done so. As Dr. Triay points out, there are cost-savings to be had by having a central location certify TRU for disposal at WIPP. (*Id.*, Paragraphs 3 and 4). Finally, DOE has made enforceable commitments under HFFACO regarding TRU waste, in particular TRUM and this court recently found DOE cannot use the TRUM exemption in the 1996 WIPP Land Withdrawal Act Amendments to escape RCRA/HWMA regulation of TRUM at DOE sites, other than WIPP. If the State is not pleased with DOE's progress regarding certification of TRU for disposal at Hanford, it can seek relief pursuant to the HFFACO.

The State observes that it has expended significant resources in working with DOE to develop the HFFACO to address contamination at Hanford, to protect the Columbia River, and to address releases and potential releases. The State asserts, however, that the HFFACO "does not address the shipment of additional offsite waste to Hanford." Once offsite waste arrives at Hanford, however, the HFFACO will apply to the management of that waste just as it applies to all of the existing waste at Hanford.[42] Indeed, the existence of the HFFACO, and its specific application to MLLW (which is subject to RCRA/HWMA regulation) favors DOE in the balance of hardships analysis. The HFFACO creates a binding legal obligation on the part of DOE. According to Laura Cusack, the State's TPA Administrator:

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[42] "There are no disposal facilities at Hanford solely dedicated to the disposal of offsite waste; offsite waste is integrated into the onsite waste activities." (French Declaration, Ct. Rec. 161 at p. 8, Paragraph 15).

> The Hanford Site currently lacks capacity for treating and disposing certain categories of MLLW and TRUM already at the Site awaiting retrieval from the LLBGs. There is at present no facility to manage waste that has to be remotely handled during treatment and processing. There is no facility capable of processing waste in large containers. There is no facility at Hanford capable of treating MLLW that requires thermal treatment before it can be disposed to a landfill (and there is very limited thermal treatment capacity nationwide). **As a result, Ecology, EPA and DOE recently (May 2004) signed a HFFACO change package establishing milestones for DOE to develop these capabilities and eliminate the backlog of untreated waste that already exists at the Site.**

(First Cusack Affidavit, Ct. Rec. 105 at p. 7, Paragraph J). Cusack observes that these HFFACO milestones will require DOE to start treating TRUM and MLLW much quicker than that assumed by the HSW EIS. (*Id*. at p. 8, Paragraph K). The court has to believe that is a good thing for the State.[43]

The State contends DOE already has a spotty history complying with the HFFACO milestones, but DOE disputes that. Clifford Clark, an employee of DOE who monitors DOE and contractor compliance with federal and state environmental laws and regulations at Hanford, says that over 60 percent of the notices of violation issued by the State were in fact "notices of correction," which are used to address "relatively minor incidents of non-conformance." (Clark

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[43] See also the Declaration of Mark S. French, Acting Federal Project Director for Solid Waste Disposition and Stabilization, and Disposal Facility Operations, Ct. Rec. 161 at pp. 14-15, Paragraph 29:

> The Hanford Site has facilities to manage RH-MLLW and RH-TRUM and will be developing additional capability for management of these waste, as required by the HFFACO Milestone series M-91. All capabilities and facilities needed to process these wastes are planned to be available by June 30, 2012, as required by Milestone M-91-01. An engineering study to develop the capabilities to retrieve and process RH and large containers of TRUM is required to be completed by December 31, 2007, as required by HFFACO Milestone M-91-05-T01. Further, DOE submits a progress report regularly to Ecology pursuant to M-91-45 describing accomplishments and plans for RH radioactive waste and large container CH or RH radioactive waste.

Declaration, Ct. Rec. 163 at p. 3, Paragraph 5). Clark adds that since entering the HFFACO in 1989, DOE has missed completion dates for only 18 milestones out of a total of 1,186 in a schedule running through 2028. According to Clark, 16 of the 18 were subsequently completed or otherwise satisfied and of the remaining two, one was replaced by another milestone which was completed, and DOE paid a civil penalty on the other over a decade ago. (*Id*. at p. 4, Paragraph 8). Since 1989, Clark says there have been 424 modifications of DOE's obligations under HFFACO. According to Clark, the description/justification sections of only five "Change Control Forms" referred to funding issues as a contributing factor, and insufficiency of funding has never been identified as the sole cause for a requested change. (*Id*. at p. 4, Paragraph 9).

DOE contends the broader national public interest favors it with regard to intended disposal of LLW/MLLW at Hanford. Dr. Triay outlines how DOE's national cleanup program works and how the various sites across the nation depend on each other to make the program work (i.e., in order for Rocky Flats in Colorado to meets its cleanup obligations, it needs to send some of its waste elsewhere, including to Hanford).[44] According to Dr. Triay:

> If the state's request for an expanded preliminary injunction is granted, DOE's ability to dispose of 62,000 cubic meters of LLW and 20,000 cubic meters of MLLW at the Hanford Site will be in jeopardy. The serious consequences of DOE's inability to dispose of such wastes at Hanford would be manifested throughout the DOE complex, because the cleanup strategies are intricately integrated and interdependent, consistent with the PEIS.

(Triay Declaration, Ct. Rec. 168, at Paragraph 9).

Dr. Triay says an expanded preliminary injunction would force Rocky Flats, INEL and ETEC to seek other disposal options for their LLW and "[t]hese other options will result in

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[44] Rocky Flats has commitments to the State of Colorado under an agreement similar to the HFFACO. In accordance with CERCLA, DOE signed an interagency agreement with EPA and the State of Colorado known as the "Rocky Flats Cleanup Agreement" which establishes enforceable milestones for the cleanup of Rocky Flats. (Triay Declaration, Ct. Rec. 168 at Paragraph 3). Dr. Triay further notes the cleanup programs at 36 other sites throughout the country are "similarly structured and guided by enforceable regulatory agreements" and the "scope of the program and the associated regulatory commitments has been integrated within a complex-wide program that is estimated to cost $142 billion and is scheduled to be completed by 2035." (*Id*.).

additional costs and schedule delays, because the process by which sites plan for LLW disposal can be quite laborious." (*Id*.). He adds that "[t]he impacts associated with the inability to dispose of sites' MLLW are even greater because DOE is not currently able to dispose of MLLW at the NTS [Nevada Test Site] due to lack of necessary state permits, and the commercial capabilities are limited to MLLW with relatively low levels of radioactivity." (*Id*. at Paragraph 10). Apparently, however, NTS is currently accepting LLW.

The State contends that Dr. Triay makes only generalized allegations of additional costs and schedule delays, but offers nothing specific. Actually, Dr. Triay's declarations are quite specific. Dr. Triay appears quite candid, as well. She does not claim that DOE would, if absolutely necessary, be unable to make alternative arrangements to store TRU and dispose of LLW/MLLW if the preliminary injunction against shipment of offsite TRU to Hanford was continued and the injunction was expanded to prevent shipment of offsite LLW/MLLW to Hanford. The court has no doubt that delay in shipment of offsite TRU and LLW/MLLW to Hanford is costly and disruptive to DOE's national cleanup effort. The critical question then, as the State puts it, is whether additional costs and schedule delays are outweighed by the risk to the State associated with interim storage of more TRU and permanent disposal of more LLW/MLLW at Hanford. Dr. Triay does not identify any emergent human health concerns with keeping LLW/MLLW at the various places at which it is currently located.

From a strictly NEPA perspective, this court does not believe the risks associated with interim storage of more TRU at Hanford outweigh the additional costs and schedule delays. At this point, however, the court must conclude the risks associated with disposal of LLW/MLLW at Hanford do outweigh the additional costs and schedule delays. That means the balance of hardships, at this time, tips sharply in favor of the State and the public interest favors the State. This conclusion is prompted by the "serious question" the court has found with regard to the HSW EIS groundwater analysis, the significant volume of LLW/MLLW intended for shipment to Hanford as compared to the volume of offsite TRU intended for shipment to Hanford, and the

fact LLW/MLLW is intended for permanent disposal at Hanford.[45] If that "serious question" is eventually eliminated, however, a preliminary injunction will no longer be warranted.

V. CONCLUSION

The defendants' Motion To Dissolve (Ct. Rec. 175) is **GRANTED** to the extent that DOE is no longer preliminary enjoined under NEPA from shipping the Battelle West Jefferson TRU to Hanford. The preliminary injunction regarding TRU is **DISSOLVED**. To the extent, however, there is TRUM in that intended shipment and as little as it may be, DOE continues to be **PRELIMINARILY ENJOINED** from shipping the same to Hanford by virtue of the summary judgment previously awarded to the State on its HWMA claim. This injunction shall remain in effect until such time as DOE establishes that additional shipments of TRUM to Hanford will not result in a violation of the HWMA or that other considerations warrant dissolving the injunction. In sum, DOE is no longer enjoined from shipping Battelle TRU to Hanford. It continues, however, to be enjoined from shipping Battelle TRUM to Hanford.

The State's Motion To Expand Preliminary Injunction (Ct. Rec. 100) is **GRANTED**. Defendants are **PRELIMINARY ENJOINED** from shipping offsite LLW and MLLW to Hanford. Plaintiff shall have a period of 90 days from the date of this order to conduct discovery, limited to the iodine-129 and/or technetium-99 estimates in the HSW EIS groundwater analysis. At the conclusion of the 90 days, plaintiff shall move for a continuance of the preliminary injunction regarding LLW/MLLW or for summary judgment, or defendants may move to dissolve the injunction or for summary judgment.

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[45] Disposal, as opposed to mere storage, may make it that more difficult to return offsite waste to its site of origin.

IT IS SO ORDERED. The District Executive shall forward copies of this order to counsel of record.

DATED this 13th May, 2005.

s/ Alan A. McDonald
ALAN A. McDONALD
Senior United States District Judge